THE IRON TRADE REVIEW

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STRONG SENTIMENT

IN FAVOR OF MAINTAINING PRICES

Results From New York Meeting.—Iron Ore Values to be Discussed.—Pig Iron Men Trying to Get Together.

By giving assurance of stability in prices of finished products and by emphasizing the importance of co-operation, the recent conference of iron and steel manufacturers in New York has done much to clear the atmosphere and prepare the way for the return of prosperity. That great good will result from more friendly relations of the leaders in the iron world, no one can seriously doubt. It was not, however, a reasonable expectation that the New York meeting would result in causing all men, from the miners of iron ore to the makers of most highly finished products, to think alike, and it is not surprising that upon some subjects discussed at the New York meeting, notably ore and pig iron, there are differences of opinion. That these differences are more likely to be satisfactorily adjusted than if the New York meeting had not been held is extremely probable.

Iron Ore Prices

Concerning iron ore the sentiment at New York was very strongly in favor of reaffirming for 1908 the prices of 1907, but all agreed that this important subject should be decided at Cleveland as in past years. A meeting will, therefore, be held in Cleveland next Friday, which will be attended by representatives of the Lake Superior ore interests and President Corey and other members of the general committee on pig iron and iron ore, at which ore values will be thoroughly discussed. Although in past years the furnace interests have endeavored to have the prices of ore fixed as low as possible, this year, owing to unusual conditions prevailing, there is undoubtedly a strong sentiment among them in favor of reaffirming the old prices, although such prices were made at a time when Bessemer pig iron was $4 per ton higher than it is at the present time. Furnace interests which take this position do so because they believe that the immediate announcement of what ore prices are to be would have a salutary effect upon the market, and also because they wish to avoid heavy losses on ore already purchased, which, in some cases, is sufficient to meet requirements up to the first of September. Some furnace interests, especially those located in territory in which southern pig iron is an important factor, are, however, advocates of a reduction in ore prices, and this position is also taken by some merchant ore interests. Steel manufacturers having their own ore mines are strongly in favor of the old prices. It is possible that a compromise may be adopted by which the old prices on Bessemer ores will be reaffirmed, and a reduction be made on non-Bessemer ores.

Pig Iron Conditions

Before the meeting in New York was held, a number of furnace interests from the central west declined longer to act in harmony with those which favored maintaining a price of $17 valley for No. 2 foundry, and one leading house which had been adhering to prices announced that it would no longer do so, but owing to the sentiment developed at New York in favor of co-operation it has been decided to make another effort to secure harmonious action on the part of furnace interests of the central west, and to this end a meeting will be held in Cleveland on Saturday.

Bar Iron Advanced

Owing to the fact that the price of steel bars is $4 higher than the recent quotation on bar iron, there has been a marked increase in orders for the latter at the expense of the former, and western manufacturers have advanced the price of bar iron $2 a ton. Bookings of structural material show a fair volume of business, and prices are being well maintained. Some of the smaller plate manufacturers are shading prices.

Ore and Pig Iron Statistics

Our monthly blast furnace statistics reveal a continuance of the policy of curtailment, the production for January being 1,043,374 tons, against 1,234,733 tons in December, and 1,820,558 tons in November. There were only 139 furnaces in blast on the last day of January, compared with 154 on Dec. 31 and 226 on Nov. 30. The curtailment is to a large extent by merchant stacks. Our annual statistics of ore shipments show the last year 41,288,755 tons of ore were shipped by lake and 956,315 tons by rail from the Lake Superior region, a total of 42,245,070, compared with 38,523,439 tons in 1906.

DEATH OF F. O. NICHOLAS.

(Special Telegram.)

New York, Feb. 5.—Othneil F. Nicholas, a prominent bridge and railway engineer and member of many scientific and technical societies, died today in Brooklyn from a stroke of apoplexy. He was well known through his connection with railway building in Peru and Brazil and with the Williamsburg bridge in New York. He was a consulting engineer of the department of bridges and president of the Brooklyn Engineers' Club.

THE WEEK IN IRON CENTERS

PITTSBURG.

Much Uncertainty in Market—Bar Iron Advanced—Pig Iron Dull.

Office of THE IRON TRADE REVIEW,
521 Park Bldg., Feb. 4.

With the pig iron situation an open proposition, 1908 ore prices still undetermined, the effect of the reaffirmation of prices on all finished lines not yet clearly demonstrated, combined with a general feeling of indecision, there is a greater factor of uncertainty entering into market conditions at the present time than at any time during the past month, during which all kinds of guesses were hazarded.

Under the very worst conditions some lines are bound to be better than others from a business standpoint, and it is from these few lines that reports of improved conditions are received. As a general proposition, however, it would take a microscope of great strength to show the structure of any material general improvement except in sentiment.

Reports of mill resumptions in the Pittsburg district have been grossly exaggerated by the daily press. To speak plainly, truth does not dwell among them, when it comes to industrial reports. The city of Pittsburg has made a large appropriation for public improvements in order to keep its unemployed at work. The distorted reports of mill resumptions are bringing hundreds of workmen from other cities to Pittsburg looking for employment, when local millmen are working one-third, one-fourth, or one-half time, and some times only half a day two to three days per week.

The general situation, except in spots, as has been noted, remains unchanged in this district. The spots where improvement is noticed is on seasonable products, wire fencing, blue annealed and galvanized sheets, jobbers' orders for pipe and the regular run of tin plate business. The market on steel and iron bars, structural shapes, plates and rails is almost completely at a standstill. The effect of the reaffirming of prices has not been determined except sentimentally—it has brought no new business worthy of note. Valley furnaces are wide apart on their pig iron quotations, and if there is any price agreement it is not being kept. Bar iron has been advanced $2 per ton.

Pig Iron.—There is a range of $1 to $1.50 in valley pig iron prices. If there is an agreement to hold Bessemer pig iron at $18 to $18.50 valley, it is being cut to the extent of the range mentioned. If there is an understanding to hold No. 2 foundry iron at $17 valley, it is being broken to the extent of at least $1, and if there is an agreement to hold basic iron at $17, it is being shaded $1. We see no reason for changing the quotations of last week. There is a little inquiry for Bessemer pig iron; 1,000 tons would cover it all and the basic inquiry would hardly total that amount. The foundry iron inquiry is in carload lots for the most part and an inquiry for a few hundred tons would create a vast commotion. Small inquiries or sales, by the time they have gone the rounds of brokers' offices and general gossip, have grown to the requirements of several months and a big part of the indefinite reports of sales consists of out and out "fakes," started largely because there is nothing else to do. More furnaces are getting ready to go into blast. The Wheeling Steel & Iron Co. has started one stack at Wheeling, W. Va., the Republic Iron & Steel Co. started No. 1 Hazleton stack on Monday, No. 2 having been going a week. Canal Dover furnace is reported as being about ready to start, and the Stewart Iron Co. stack will start some time during the week on a run of low phosphorous iron. The active furnaces in the valleys remain as reported last week—Shenango No. 1, Brier Hill and Ohio Iron & Steel on Bessemer and basic; Andrews & Hitchcock, Sharpsville and Girard are on foundry and forge iron, and Youngstown Steel on washed metal. Southern interests are holding at their New York agreement figures in this territory, $13.50 Birmingham, but are doing nothing on sales. We continue to quote as follows on prompt or through the first quarter:

Bessemer, Valley	$17.00 to 18.00
Bessemer, Pittsburg	17.90 to 18.90
No. 1 Foundry, Pittsburg	17.40 to 18.40
No. 2 Foundry, Pittsburg	16.90 to 17.90
Gray Forge, Pittsburg	15.90 to 16.40
Basic, Valley	16.00 to 17.00
Basic, Pittsburg	16.90 to 17.90

Ferro-Manganese.—The only transactions reported during the past week have been one or two sales of carload lots for prompt shipment, and these went on the basis of $49 Pittsburg. In 100-ton lots for future shipment we quote $48 Pittsburg on foreign 80 per cent.

Imported 50 per cent ferro-silicon is quoted $93 Pittsburg on forward deliveries; domestic 12 per cent, $34; 11 per cent, $33; 10 per cent, $32. The lower grades of imported ferro-silicon are quoted 50 cents lower. These quotations are applicable to Pittsburg territory.

Plates.—There is absolutely no new plate business being placed in this district, and current order specifications are extremely light and confined exclusively to old construction work, mostly steel car companies. Lake ship yards are taking out a little of their contract material, but it is mostly applied to repair work which does not run into heavy tonnages. Local mills are holding firm at the 1.70c base, although eastern mills are reported to have shaded this figure. We continue to quote the following mill prices:

Tank plate, ¼ inch thick, 6¼ to 100 inch, 1.70c f. o. b. mill Pittsburg. Extras are as follows per 100 pounds: Boiler and flange steel plates, 0.10c; A. B. M. A. and ordinary fire-box steel plates, 0.20c; still bottom steel, 0.30c; marine steel, 0.40c; locomotive fire-box steel, 0.50c; all sketches, excepting straight taper plates varying not more than 4 inches in width at ends, narrowest end not being less than 30 inches, 0.10c; circles, 0.20c. Plates in width over 100 inches up to 110 inches, 0.05c; over 110 inches up to 115 inches, 0.10c; over 115 inches up to 120 inches, 0.15c; over 120 inches up to 125 inches, 0.25c; over 125 inches up to 130 inches, 0.50c; over 130 inches, $1. Gages under ¼ inch to and including 3/16-inch plate on thin edges, 0.10c; under 3/16 to and including No. 8, 0.15c; under No. 8 and including No. 9, 0.25c. Five cents extra for less than carloads. Terms, net cash in 30 days.

Sheets.—The past week has seen a slight improvement in the sheet business, although there is not much contract buying, the orders coming from manufacturers of seasonable goods. This business runs to blue annealed and galvanized with a fair amount of roofing. The volume of business on light black sheets is small. We continue to quote:

Black steel sheets, one pass, cold rolled: Nos. 11-12, 2.10c; Nos. 13-14, 2.15c; Nos. 15-16, 2.20c; Nos. 17-21, 2.25c; Nos. 22-24, 2.30c; Nos. 25-26, 2.35c; No. 27, 2.40c; No. 28, 2.50c; No. 29, 2.60c; No. 30, 2.70c. Galvanized: Nos. 10-11, 2.45c; Nos. 12-14, 2.55c; Nos. 15-16, 2.65c; Nos. 17-21, 2.80c; Nos. 22-24, 2.95c; Nos. 25-26, 3.15c; No. 27, 3.35c; No. 28, 3.55c; No. 29, 3.70c; No. 30, 3.95c. Blue annealed; No. 11-12, 1.85c; Nos. 13-14,

1.90c; Nos. 15-16, 2c. Corrugated roofing, $1.75 per square for No. 28 painted, 2½-inch corrugation, and $3.10 per square on galvanized roofing, 2½-inch corrugation, No. 28.

Tin Plate.—There is more available tin plate business on the books of manufacturers than of any other finished line, although the aggregate does not reach the normal first quarter total. Heavy western shipments for Alaskan points are being made at this time. We quote:

Coke tin plate, 100-pound basis, 14 x 20, 3.70 f. o. b. mill, Pittsburg district. Terms, 30 days, less 2 per cent for cash in 10 days.

Rails and Track Material.—A little light rail business, just enough to say there is a movement, the whole tonnage hardly sufficient to keep one good sized mill in operation two days a week, has been taken on since the last report. With the spread of $3 to $4 between new rails from billets and rerolled rails, both divisions are getting a little, but it is scant picking. There is no new business in standard sections, and the railroads have ordered no releases. To all appearances, rail buying is the thing farthest from their present intentions. We quote as follows on the present specifications for Bessemer rails:

Fifty-pound and heavier, 500-ton lots and over, $28; carloads and less than 500 tons, $30; less than carload lots, $32; 8-pound, $36; 12-pound, $32; 16-pound, $30; 20-pound, $29; 25 to 45-pound, $28; angle splice bars for standard sections, $1.65; standard spikes, $1.75 to $1.80 Pittsburg; hand spikes, $1.95 to $2.05 Pittsburg.

Steel.—There is no inquiry for semi-finished steel and the market is nominal. Bessemer and open-hearth billets are quoted at $28 Pittsburg mill, and sheet bars at $29. Because of the old tonnage carried over from the last quarter of last year, which is now being taken out, not much new buying is expected for a month or six weeks, even with the continued operation of tin mills and a slight improvement in the demand for blue annealed and galvanized sheets.

Hoops and Bands.—New contracts and current specifications are small. A large proportion of the hoop mills are in operation, but they are running on cotton ties which will be shipped by river to southern distributing points to be available when the market opens two or three months hence. We continue to quote:

Hoops in carload lots, 2c; in less than carload lots, 2.10c; bands, 1.60c; base half extras as per standard steel.

Merchant Bars.—The price of bar iron has been advanced $2 per ton. Prices on steel bars are being maintained. We quote as follows:

Common iron bars, 1.40c to 1.50c Pittsburg in carload lots and over, 1.50c in less than carloads; 1.47c to 1.50c base Pittsburg plus freight to point of shipment on western deliveries; Bessemer steel bars, 1.60c net; plow and cultivator, 1.60c net; channels, angles, zees, tees, under three inches, 1.70c, all f. o. b. Pittsburg. The following differentials are maintained on steel: Less than 2,000 pounds, 0.10c advance; less than 1,000 pounds of a size, 0.30c advance. Cold rolled and ground shafting, 50 per cent in carloads, and 47 per cent in less than carloads, delivered in base territory; open-hearth spring steel, 2.25c to 2.50c; sleigh shoe flats, 1.60c to 1.65c; smooth finished machinery steel, 1.90c to 2c; toe calk, 2.10c to 2.15c. Planished and machine straightened tire steel is 1.80c base. Iron finished tire under 1½ by 1½ inches, 1.75c; iron finished tire, 1½ by ½ inches and over, 1.60c base. All tire subject to ½ extra on the steel card.

Structural Material.—The only inquiries of any size now in the market, consist of the viaduct over the B. & O. railroad at Cleveland 1,500 tons, and the new court house at Youngstown, O. There is absolutely no inquiry for individual or corporation work. The usual spring building movement has not shown itself yet, and with present money conditions no big movement is expected. Mills are operating but a small portion of the time, and none of the jobbing interests are buying for stock. Prices are unchanged as follows:

Beams and channels, 15 inches and under, 1.70c; over 15 inches, 1.80c; zees, 1.70c; tees, 1.75c; angles from three to six inches inclusive, 1.70c; over six inches, 1.80c; universal and sheared plates, 6¼ inches and wider, 1.80c base.

Merchant Pipe.—Immediately following the Gary dinner in New York, the leading interest sent notices to the trade that all prices had been reaffirmed. Some slight improvement is noted in business conditions, although only small tonnages from jobbers are being received, but the encouraging feature is that this small business is well distributed and coming from all parts of the country. We continue to quote the following official discounts of the leading interest to consumers in large lots, with an additional 1.5 off to jobbers in large lots:

	—Steel—	
	Black.	Galv.
⅛ and ¼ inch	65	49
⅜ inch	67	53
½ inch	69	57
¾ to 6 inches	73	63
7 to 12 inches	70	55

EXTRA STRONG PLAIN ENDS.		
⅛ to ⅜ inch	58	46
½ to 4 inches	65	53
4½ to 8 inches	61	49
DOUBLE EXTRA STRONG PLAIN ENDS.		
½ to 8 inches	54	43

Boiler Tubes.—While tonnages are small and orders scattered the January business on boiler tubes was greatly in excess of December and is gaining in a small way. We quote the following discounts:

	Iron.	Steel.
1 to 1¼ inch	42	47
1¾ to 2¼ inch	42	59
2½ inch	47	61
2¾ to 5 inch	52	65
6 to 13 inch	42	59

2¼ inches and smaller, over 18 feet, 10 per cent net extra.

2¾ inches and larger, over 22 feet, 10 per cent net extra.

Wire Products.—The volume of new business, which also includes releases on suspended contracts, is good, and the leading interest as well as the largest independents are running from 70 to 80 per cent of capacity. The bulk of the business is in plain and barbed fence wire and staples. Mail business at this time is slow, inasmuch as jobbers still have considerable stock on hand and they are only ordering where unbalanced stocks make it necessary. We continue to quote:

Wire nails, jobbers' carload lots, $2.05; retailer's carload lots, $2.10; less than carloads, $2.15; painted barb wire, $2.20 for jobbers in carloads; retailers in carloads, $2.25; and less than carload, $2.35; with 30c for galvanizing; plain wire, 1.90c for jobbers, and 1.95c by carload.

Rods.—The market is nominally $35 to $36 Pittsburg on Bessemer and $37 on open-hearth rods.

Coke.—The past week has been the first since the big slump to show any activity on contract coke. During the past few days, one contract for 5,000 tons of furnace coke per month to the first half of the year, was let at $2, and another for 6,000 tons per month through the same period, was closed at $1.95. Spot furnace coke is quoted $1.70 to $1.80. There is no inquiry for foundry coke, and a wide range in price according to grade exists. Standard 72-hour Connellsville coke is quoted $2.40, while second grade or outside district coke is quoted $2.15 to $2.25. The Republic stacks of the Republic Iron & Steel Co. is in full operation, the two Hazelton furnaces at Youngstown having been started the past two weeks. The Frick Coke Co. has about 50 per cent of its ovens in operation. It is the smaller unattached operations in the district that are making low quotations.

Old Material.—There is a slightly better tone in the scrap market, but the improvement is mostly brought about by higher quotations by brokers who figure that mills that are usually large users of

old material will soon have to come into the market. The actual transactions have been on small tonnages and we quote the following prices, gross tons, delivered in the Pittsburg district.

Heavy melting scrap, $13 to $13.50; rerolling rails, $13.50 to $14; bundled sheet scrap, $10 to $10.50; iron axles, $18.50 to $19.50; old iron rails, $16 to $17; No. 1 wrought scrap, $13.50 to $14; old car wheels, $16 to $17; low phosphorus scrap, $16.50 to $17; machine shop turnings, $8.50 to $9; cast borings, $7 to $8; No. 1 cast scrap, $14.50 to $15.

CHICAGO.

Improvement in Store Trade—Pig Iron Quiet—Bar Iron Advanced.

Office of THE IRON TRADE REVIEW, 1362 Monadnock Block, Feb. 4.

A review of the past week shows improvement in store trade covering merchant bars, plates, tubular goods, pipes, bolts, spikes and structural shapes. Mill business in wire goods has grown during January. Contracts for structural steel during the week aggregated nearly 3,000 tons. Two northern cities ordered 4,800 tons of cast iron pipe and bar mills report the booking of encouraging tonnages. Bar iron has been advanced $2 per ton.

The pig iron situation has been a very quiet one and is pervaded by a sentiment in favor of permitting matters to take their course. This is not from choice on the part of anyone, but is due both to the fact that so many furnaces are out and also to the unwillingness of buyers of pig iron to saddle themselves with a stock of iron which will not be immediately turned into a product already contracted for. Confidence and initiative are qualities easily destroyed, but slowly regained. Railroads have shown no further intent to buy standard sections and the volume of light rail transactions fell to a minimum. The various influences arising from the attempt to reaffirm prices generally from raw materials to finished product have been shown so far in this territory only as applied to steel mill products, prices of which are being absolutely maintained. It is very difficult, however, in the face of the well-defined market sentiment regarding the price relationships of various finished and semi-finished materials to convince buyers that wisdom will support or necessity permit an uninterrupted maintenance of all present levels.

Pig Iron.—The aggregate amount of iron of all grades sold in this vicinity during the last week would not exceed from 1,500 to 2,000 tons, all of which was in small lots. This lack of buying makes it apparent that the wants of local consumers were pretty thoroughly covered for as long a period in the future as any one cares to buy just now, by recent purchases of $12 southern iron. The parcels of iron which are being sold bring prices of $13, $13.25, or even $13.50, depending on the delivery with $13 the figure quoted most frequently. This does not mean that better than $13 can no longer be done, for, on the contrary, it is practically certain that even the co operative spirit of some southern furnaces, whatever vestiges of it may remain, would not stand in the way of a sale if one were possible at the right price. So far as present indications may be read, lack of inclination to buy iron at from $12 to $13 is to be attributed not so much to any general belief in the probability of even lower prices as to a disposition to buy only such quantities as orders for finished material already in hand will require. Such orders are very limited. Lake Superior charcoal iron is being sold at lower prices than a week ago and we quote $21 to $22 and Jackson county silveries, we quote 50 cents lower as indicating the influence of southern silveries. The local independent steel mill, which has been selling some foundry and basic iron continues to offer northern foundry grades at its own prices. We quote, for Chicago delivery, as follows:

Lake Superior Charcoal	$21.00 to 22.00
Northern Foundry No. 1	18.50 to 19.00
Northern Foundry No. 2	18.00 to 18.50
Northern Foundry No. 3	17.50 to 18.00
Southern Foundry No. 1	17.85 to 18.35
Southern Foundry No. 2	17.35 to 17.85
Southern Foundry No. 3	16.85 to 17.35
Southern Foundry No. 4	16.35 to 16.85
Southern No. 1 Soft	17.85 to 18.35
Southern No. 2 Soft	17.35 to 17.85
Southern Gray Forge	15.35 to 15.85
Southern Mottled	15.10 to 15.60
Southern Silveries, 4 per cent Silicon	18.85 to 19.35
Southern Silveries, 5 per cent Silicon	19.35 to 19.85
Southern Silveries, 6 per cent Silicon	20.35 to 20.85
Jackson Co. Silveries, 6 per cent	21.90 to 22.40
Jackson Co. Silveries, 8 per cent	23.90 to 24.40
Jackson Co. Silveries, 10 per cent	25.90 to 26.40
Malleable Bessemer	18.50 to 19.00
Standard Bessemer	19.40 to 19.90
Alabama Basic	18.35 to 18.85

Billets and Rods.—This market has enjoyed practically no buying of billets for many weeks. Small lots of forging billets are disposed of from day to day, but tonnages are entirely lacking. We quote rolling billets $31 and forging billets $33, Chicago. Wire rods are quoted $35 for Bessemer, $36 for basic, and chain rods $37, f. o. b. Pittsburg.

Merchant Bars.—Bar iron prices have been advanced $2 per ton. The volume of orders for this material has increased materially in the last month as compared with January and the mills of this district are operating more regularly. The Republic Iron & Steel Co. sold about 1,000 tons during the week, and the Interstate Iron & Steel Co. obtained for its mills a very good tonnage in new orders and specifications. The steel bar situation is very quiet. Merchant bars in the various other forms have been in growing demand from store and jobbers' trade shows a substantial expansion. The western store of the leading independent producer at Pittsburg reports a gain of at least 10 per cent each week during January. We quote for Chicago delivery, carload lots, as follows:

Bar iron, 1.85c to 1.88c; soft steel bars and bands, 1.78c, half extras; soft steel angles, less than 3 x 3, 1.88c; hoops, 2.18c base, full extras; planished or smooth finished tire steel, 1.98c; iron finish, up to 1½ x ½ inch, 1.93c base, tire card; iron finish, 1½ x 1½ inch and larger, 1.78c base, steel card; channel for solid rubber tire, ¾ to 1 inch, 2.28c, and 1⅛ inch and larger, 2.18c; smooth finished machinery steel, 2.18c; flat sleigh shoe, 1.83c; concave and convex sleigh shoe, 1.93c; cutter shoe, 2.36⅛c; toe calk steel, 2.33c; railway spring, 1.98c; crucible tool steel, 7c to 9c, with higher prices asked on special grades. Quotations on shafting are 54 per cent off the list for carload lots, and 48 per cent off for less than carload lots, base territory delivery. On iron and steel bars from local stocks, we quote as follows: Bar iron, 2.10c, full extras; soft steel bars, $2 per 100 pounds base, plus half extras; soft steel hoops, 2.40c, full extras.

Plates.—The plate mills of the Illinois Steel Co. at South Works were not started on Monday. Some orders have been taken and further specifications on contracts have come forward indicating a slight betterment of the situation, but in a no wise marked degree. We quote on the same basis as last week, as follows:

Plates, ¼ inch and heavier, 6¼ to 100 inches wide, either universal or sheared, 1.70c Pittsburg base. For extras see Pittsburg report. Freight rate to Chicago, 18c per 100 pounds for carload lots, and 21c for less than carload lots. Jobbers' prices for shipment from local stocks are as follows: Tank steel, ¼ inch and heavier, up to 72 inches wide, 210c to 2.20c; from 72 to 96 inches wide, 2.20c to 2.30c; 3/16 inch up to 60 inches wide, 2.20c to 2.25c; 72 inches wide, 2.45c to 2.55c; No. 8 up to 60 inches wide, 2.20c to 2.25c; flange and head quality, 25c extra.

Sheets.—Trading in sheets has improved with the general movement of materials from store, but has had no distinctive growth. We quote, Chicago delivery, as follows:

No. 10, 2.20c to 2.25c; No. 12, 2.25c to 2.30c; No. 14, 2.30c to 2.35c; No. 16, 2.40c to 2.50c; Nos. 18-20, 2.60c to 2.65c; Nos. 22-24, 2.65c to 2.70c; No. 26, 2.70c to 2.75c; No. 27, 2.75c to

2.80c; No. 28, 2.85c to 2.95c; No. 30, 3.25c. Galvanized sheets, Nos. 10 to 16, 3.05c to 3.15c; Nos. 18 to 20, 3.15c to 3.25c; Nos. 22 to 24, 3.30c to 3.35c; No. 26, 3.50c to 3.55c; No. 27, 3.70c to 3.75c; No. 28, 3.90c to 4.00c; No. 30, 4.40c to 4.50.

Structural Steel.—Fabricators of structural material report a constantly bettered tone in the demand for steel shapes. Mill shipments and store deliveries are in steadily increasing volume. Orders taken during the week include 750 tons by the Pennsylvania Steel Co. for the Chicago, Milwaukee & St. Paul railway, 1,600 tons of miscellaneous railroad construction steel by the American Bridge Co., and 382 tons of shapes for a mine head frame at Goldfield, Nev.

The intent, at least so far, to persevere in the maintenance of prices on finished material is indicated by the fact that a bona fide offer to buy a tempting tonnage of structurals at a concession of $2 a ton was turned down without ceremony. For this and similar reasons several other projects mentioned heretofore are still hanging fire. It cannot be denied that even in the face of the general reaffirming of prices the action of buyers in various quarters continues to evidence a firm belief in not distant concessions. We continue to quote without change:

Beams and channels, 3 to 15 inches inclusive, 1.70c Pittsburg. For extras see Pittsburg report. Freight rate from Pittsburg to Chicago, 18c per 100 pounds for carload lots, and 21c per 100 pounds for less than carload lots. Quotations from store are as follows:

All angles, 3 inches and larger, including 6 inches, $2.05 per 100 pounds; angles, over 6 inches, $2.15 per 100 pounds base; beams, 3 to 15 inches inclusive, $2.05 per 100 pounds base; channels 3 inches and larger, $2.05 per 100 pounds base. Less than carload lots are $1 a ton higher than foregoing prices.

Rails and Track Supplies.—Orders for light rails did not approach in volume the record of the week preceding and in standard sections there were no transactions at all. It is reported that some of the railroads now heavily in debt to manufacturers have found ways for financing their affairs and taking care of their requirements. That it will be the disposition of many railroads to buy at this time, even if they are able to, is not so clearly established. The interest in spikes and bolts leads in the attention given to railroad maintenance, and a fair tonnage has been disposed of. Specifications are better, but the chief ground for optimism is in the favorable comparison of January business with that of December. We quote as follows:

Standard rails, $28 f. o. b. mill, full freight to destination; light rails, 25-pound to 45-pound, $28; 20-pound, $29; 16-pound, $30; 12-pound, $31. Track supplies, f. o. b. Joliet, angle bars, 1.65c; spikes, 1.85c to 1.95c; track bolts, with square nuts, 2.35c to 2.45c; with hexagon nuts, 2.50c to 2.60c. Small railroad and square boat spikes, 2c base, f. o. b. Pittsburg.

Merchant Pipe and Boiler Tubes.—The mill situation remains much as it has been for the past 30 days, but during the week under review store trade has been very good. Stocks are not being increased, however, and only a balancing of the material on hand in the various sizes is attempted. We quote mill discounts, Chicago delivery, carload lots, as below. On steel pipe jobbers are allowed a concession of one point and 5 per cent additional from the schedule in force:

	—Steel— Black.	Galv.
¾ to 6 inches, inclusive....	72.2	62.2

BOILER TUBES.

	Steel.	Iron.	Seamless.
2¾ to 5 ins., inclusive..	63.2	50:2	49.2

Mill quotations on iron pipe are five points higher than the foregoing prices.

We have revised our prices from store, as below. A concession of one-half to one point from these prices is allowed by Chicago jobbers on carload orders shipped from local stocks. We quote for less than carload lots as follows:

MERCHANT PIPE.

	Black.	Galv.
⅛ to ¼ inch	64	48
⅜ inch	66	52
½ inch	68	56
¾ to 6 inches	72	62
7 to 12 inches	68	53

Store prices for wrought iron pipe, carload lots, from Chicago stocks, are as follows: One-eighth to ¼ inch, 59; ⅜ inch, 61; ½ inch, 63; ¾ inch to 6 inches, 68; 7 inches to 12 inches, 65. Boiler tubes from store are unchanged as follows:

	Steel.	Iron.	Seamless.
1 to 1½ inches	35	35	35
1¾ to 2¼ inches	50	35	35
2½ inches	52½	35	35
2¾ to 5 inches	60	47½	47½
6 inches and larger	50	35	..

Cast Iron Pipe.—The city of Minneapolis bought from the United States Cast Iron Pipe & Foundry Co. 3,200 tons of cast iron pipe and the contracts for 1,600 tons let by St. Paul, Minn., went to the Dimmick Cast Iron Pipe Co. There are no other lettings of noteworthy importance in prospect for the immediate future, though the delayed buying of pipe will without doubt run the spring purchases up into a round tonnage. We quote: Four-inch pipe, $30; 6 to 12-inch, $29; larger sizes, $28; gas pipe, $1 a ton higher.

Wire Products.—The price of poultry netting was advanced 2½ per cent, effective Feb. 1, and the woven wire cloth interests advanced the price of painted wire screen 5 cents per 100 square feet to retailers. Some figures from the principal producer are interesting as showing the growth of the trade in wire products. Sales in December amounted to approximately 42,000 tons, as compared with 86,000 tons in January and specifications in December aggregated 50,000 tons, as compared with 89,000 tons during last month. In these tonnages the most important factors were wire nails and barb wire for southern consumption. Establishing prices for the spring trade noticeably increased the volume of business. We quote to jobbers, Chicago delivery, as follows:

Wire nails, $2.23; painted barb wire, $2.38; galvanized barb wire, $2.68; smooth annealed wire, $2.08; smooth galvanized wire, $2.38; polished staples, $2.23; galvanized staples, $2.63. Carload lots to retailers, 5 cents higher; less than carload lots, 15 cents higher.

Coke.—Coke accumulated at delivery points in this territory has been moved to a great extent and the situation cleared up accordingly. Foundry grades alone are in demand and a number of fair-sized contracts have been made, though this is a purely relative improvement. We quote Connellsville foundry coke from $2.50 to $2.75 and furnace coke from $1.75 to $2.

Old Material.—The activity of dealers in anticipating future mill requirements has added a very perceptible firmness to the scrap market. The present uncertainties of mill operations and of the convalescence from the period of low prices are still evidenced, however, by occasional prices lower than those quoted. The Great Northern railway is offering 5,000 tons of old material, most of which will probably go to dealers, as mills are much behind them in accumulating stocks. We quote, gross tons in the first paragraph, as follows:

Old car wheels	$19.00 to 19.50
Old iron rails	18.00 to 18.50
Re-rolling rails (3 ft. and over)	13.00 to 13.50
Old steel rails (3 ft. and under)	12.50 to 13.00
Light section relayers, 45 lbs. and under, subject to inspection	21.00 to 23.00
Relaying rails, subject to inspection	19.00 to 19.50
Frogs, switches and guards	12.50 to 13.00
Heavy melting steel	12.50 to 13.00

We quote, net tons, as follows:

No. 1 R. R. wrought	$12.50 to 13.00
No. 2 R. R. wrought	11.50 to 12.00
Knuckles, couplers and springs	10.50 to 11.00
Shafting	14.50 to 15.00
Iron car axles	17.00 to 17.50
Steel car axles	16.00 to 16.50
Dealers' forge No. 1	10.00 to 10.50
Pipes and flues	9.00 to 9.50
No. 1 cast, 150 lbs. and less	13.00 to 13.50
No. 1 mill	8.50 to 9.00
Mixed busheling (Nos. 1 and 2)	8.00 to 8.50
Country sheet	5.50 to 6.00
No. 1 boiler cut	8.00 to 8.50

Boiler punchings	10.50 to 11.00
Cast Borings	5.50 to 6.00
Mixed borings, etc.	5.50 to 6.00
Machine shop turnings	7.50 to 8.00
Railroad malleable	12.00 to 12.50
Agricultural malleable	11.50 to 12.00
Stove plate and light cast scrap	11.50 to 12.00
Old iron splice bars	15.00 to 15.50

CLEVELAND.

Ore Meeting to Be Held Friday—Pig Iron Agreement Dissolved.

Office of THE IRON TRADE REVIEW, Browning Building, Feb. 4.

Iron Ore.—No action has yet been taken in regard to the fixing of prices on iron ore for 1908. A meeting of ore representatives, with President Corey, of the United States Steel Corporation, and other members of the Gary committee on iron ore and pig iron, will be held in Cleveland Friday, at which time the whole subject will be taken up and discussed and a course of action outlined in regard to prices.

Pig Iron.—An unsuccessful outcome has thus far resulted from the attempt of middle western producers to hold the foundry iron market firm on a basis of $17 valley for Northern No. 2. Developments of the past week have temporarily brought about the abandonment of the plan for concerted action, and furnace interests have notified each other that they are again acting independently. As a result, the market has settled to about $16 and $16.50 valley furnace for No. 2 foundry. However, there is a general sentiment against further declines in prices and at a meeting to be held by foundry and malleable interests in Cleveland next Saturday efforts will be made to reach a harmonious understanding. Considerable iron is being piled in furnace yards, and though some spot iron is moving at prices lower than for forward delivery, producers are now facing the outlook of being forced to blow out after storing their output to yard capacity, unless conditions materially improve. They are not disposed, however, to quote present prices beyond July 1, in the expectation that the market will present a better situation for the last half. The receipt of some shipping orders in the week on deferred contracts is affording some basis for the belief that a slightly larger melt is being done. Cleveland furnaces, in accordance with the abandonment of the $17 basis plan, have re-established their prices at $17.25, Cleveland delivery, for No. 2. Because of the attempt of furnace interests to elevate the market, sales of the week have been few and for small amounts. Pending inquiries call for 2,000 tons of malleable for second quarter delivery, and 500 tons of No. 2 foundry for second quarter. We have revised our prices, and quote Cleveland delivery for first quarter, charcoal iron being based on water freight rates, as follows:

Bessemer	$18.50 to 18.90
No. 1 foundry	17.50 to 18.00
No. 2 foundry	17.25 to 17.50
No. 3 foundry	16.50 to 17.25
No. 2 southern	17.35 to 18.35
Gray forge	16.75 to 17.25
Lake Superior charcoal	23.50 to 24.00

Coke.—The coke market manifests no special features. Some contracting is being done in both furnace and foundry coke. In furnace coke prices as low as $1.85 ovens on contract extending into the second quarter have been made. We quote foundry coke for forward delivery at $2.50 to $2.75 ovens, and furnace coke at $1.90 to $2 ovens. Prompt prices are lower.

Finished Material.—As evidenced by the active mill capacity of some of the principal interests, the week presents some tangible indications upon which to base a more cheerful feeling. One company reports having all but two of its mills in operation, and another is working all of its principal mills, though not at normal capacity, including its rail mill on standard sections in the present week. Sales offices, following the receipt of news from New York of the reaffirmation of prices on steel products, have notified their patrons that they may now with confidence specify against contracts, but the latter are taking tonnages very cautiously. Some new inquiries on steel bars, however, have been brought out by the announced action on prices. Local jobbers have reduced store prices of steel bars from $1.95 to $1.80 in order to dispose of some of the stock on hand. There is not a great deal of activity in the bar market, either in iron or steel. Local bolt and nut makers, however, who have been using steel bars, are now using more bar iron, and some of them are expecting to enter the market shortly for large tonnages of the latter. Since the recent reduction of $4 a ton to $1.40, Pittsburg, did not stimulate bar iron business, the Western Bar Iron Association, at a meeting in Chicago, Tuesday, advanced the price $2 a ton to $1.50, Pittsburg, for western shipment. Eastern makers are expected to take similar action. In the local field, both the mills of the Union Rolling Mill Co. and the Empire Rolling Mill Co. shut down Monday, after having operated for several weeks. Some new contracts are being taken in plates and shapes from bridge and manufacturing companies, and these are reported to compare favorably with the tonnages ordered by the same companies a year ago. Cutting of prices on sheets and plates is being done by small middle western mills. The light rail market continues irregular, and prices as low as $24 mill for 25 to 45 pound sections have been named.

Old Material.—A small volume of business is noted, local mills distinctly refraining from any buying movement. There is some demand for borings and also for heavy cast. Some declines from last week's nominal quotations are reported. We quote, f. o. b. Cleveland, prices largely nominal, as follows:

Old iron rails	16.25 to 17.25
Old steel rails (re-rolling)	14.00 to 14.50
Old steel rails (under 6 feet)	12.25 to 13.25
Old car wheels	16.25 to 17.25
Old steel boiler plate	9.25 to 10.25
Steel axles	14.50 to 15.00
Malleable iron (railroad)	12.25 to 13.25
Malleable iron (agricultural)	10.25 to 11.25
Heavy steel	11.25 to 12.25
Country mixed steel	10.75 to 11.75
Low phosphorus	14.75 to 15.50

We quote, net tons, as follows:

No. 1 R. R. Wrought	11.75 to 12.75
No. 1 busheling	11.00 to 11.50
No. 1 machine cast	12.50 to 13.00
Iron axles	16.25 to 17.25
Axle turnings	7.25 to 8.25
Machine shop turnings	7.00 to 7.50
Grate bars	9.25 to 10.25
Pipes and flues	9.00 to 10.00
Tank iron	8.25 to 9.25
Hoop and band iron	5.25 to 6.25
Sheet iron	4.25 to 5.25
Wrought drillings	7.00 to 7.50
Stove plate	10.25 to 11.25
Cast borings	5.00 to 6.00

CINCINNATI.

Volume of Business Light—Prices Show Little Change.

Office of THE IRON TRADE REVIEW, First National Bank Bldg., Feb. 4.

Pig Iron.—The volume of business continues moderate and consists mainly of scattering tonnages ranging from 100 to 500 tons. It is difficult to describe the price situation without submitting a range of $12.50 to $13.50 Birmingham for southern iron. Sales agencies representing southern furnace interests adhering to $13.50 schedule are practically out of the race. The rest of the southern makers have apparently no settled policy, although it is believed that nothing better than $12.50 Birmingham can now be done. The surroundings of the market according to trade talk, appear to be of a nature not calculated to stimulate strength. It is stated by men well informed on the situation, that there is now in furnace yards of the Alabama furnaces about 125,000 tons of pig iron. It is also said that with but few exceptions those stacks now in blast in the south are accumulating iron. It is also reported that two additional stacks will be blown in in the near future. If these statements may be credited and the territory available as a market for southern iron in competition with northern is considered, it would appear that the consumptive requirements were exceedingly

low. In this connection, the price at which northern iron is held, especially in southern Ohio, has a tendency to widen the territory in which southern iron has a price advantage. It is also observed that the inquiry coming out is mainly for forward delivery and the call for prompt shipment iron is almost nil. It was stated by one of the leading agencies here that it had had requests for hold-up on shipments on contracts taken in December, which indicated that the buyers were not needing as much iron as they had expected to melt when they placed their orders at the close of the year. The price situation on northern iron, so far as this market and territory is concerned, is peculiar and unusual. Valley furnaces with a $16.00 price and a freight rate of $1.80 can deliver iron in Cincinnati at $17.80, while the Ironton district with a $17.00 price and a $1.20 freight rate are confined to a price of $18.20. An inquiry for 6,000 tons of foundry iron for a Detroit melter for deliveries in the second, third and fourth quarter of the year is attracting considerable attention. Some southern stacks which have been leaders in the price making recently cannot readily conform to the analysis requirements on this business. The inquiry has, however, developed the attitude of southern furnaces in regard to future delivery. Some of the producers are willing to figure reasonably on the second quarter requirements, but hesitate to commit themselves on the basis of present level of prices for the last half of the year and in considering this matter it has been suggested that, with an improvement in the market, business taken now would be undesirable tonnage, and, should the market decline, the general business condition of the country would probably be in poorer condition than it is today, in which event there is liability of shipments being held up. The inquiry for steel making irons from a local melter involving about 5,000 tons is still pending. Some inquiries from eastern melters are under consideration here. Southern Ohio furnaces appear to be uniformly maintaining $17 at furnace for No. 2 foundry. Eight per cent silicon is quotable at $21 at furnace, but this price could probably be shaded. Some bargain lots of southern iron have been purchased for investment for prompt delivery. One small sale of southern gray forge went to a consumer at $11 Birmingham. We quote for prompt delivery and first quarter, delivered Cincinnati, based on freight rate of $3.25, from Birmingham for southern iron, and $1.80 from valley furnace and $1.20 from Ironton dsitrict as follows:

	PER TON
Southern foundry No. 1	$16.25 to 16.75
Southern foundry No. 2	15.75 to 16.25
Southern foundry No. 3	15.25 to 15.75
Southern foundry No. 4	14.75 to 15.25
Southern No. 1 soft	16.25 to 16.75
Southern No. 2 soft	15.75 to 16.25
Southern gray forge	14.25 to 14.75
Northern No. 1 foundry	18.30 to 18.70
Northern No. 2 foundry	17.80 to 18.20
Northern No. 3 foundry	17.30 to 17.70
Northern 8 per cent silicon	22.20 to 22.70

Finished Material.—A few scattering mill orders have been received and specifications on contracts have been fair and compared with the recent past. Retail business at the stores continues light. Less than carload lots are quoted as follows, f. o. b. Cincinnati:

Bar iron, 1.75c; steel bars, 1.85c, one-half extras. In some instances, retailers are still asking 2.10c, full extras, from store on small lots for both iron and steel. Angles, 3 x 3 and over, 2.15c to 2.25c; beams and channels, 15 inches and under, 2.15c; small angles and architectural channels, 2c base; plates, ¼ inch and heavier, 2c; 3/16 inch, 2.10c; No. 8, 2.15c; sheets (blue annealed) No. 10, 2.25c; No. 12, 2.30c; No. 14, 2.35c; No. 16, 2.45c; box annealed sheets, Nos. 18 and 20, 2.65c; Nos. 22 and 24, 2.75c; Nos. 25 and 26, 2.80c; No. 27, 2.85c; and No. 28, 2.95c; boiler tubes, 62 per cent off base; turnbuckles, 45 per cent off; rivets, 3.15c base; cold rolled shafting, 50 per cent off list; steel tire, 2.05c base.

Coke.—A slight improvement is noticeable in the call for foundry coke, but prices are somewhat irregular and circulars are out offering certain makes at $2.40 at the ovens. Some of the well-known brands are held at $2.75. There is but little contracting and the market is inactive. Prices in the leading coke producing districts are as follows:

Wise County Furnace Coke	$1.75 to 2.00
Wise County Foundry Coke	2.40 to 2.65
Pocahontas Furnace Coke, prompt shipment	1.65 to 2.00
Pocahontas Foundry Coke	2.40 to 2.65
Connellsville Furnace Coke, prompt shipment	1.75 to 2.00
Connellsville Foundry Coke	2.25 to 2.75

Old Material.—The market is quiet, but prices seem to be fairly well maintained and the undertone to the market gives evidence of strength. We quote dealers' prices, f. o. b. Cincinnati, as follows:

Old No. 1 R. R. wrought, net tons	**$12.00 to 12.50**
Cast machine and fdy., net tons.	**12.50 to 13.50**
Old iron rails, gross tons	16.50 to 17.50
Old steel rails (re-rolling) gross tons	**12.50 to 13.50**
Old short lengths, gross tons	12.50 to 13.50
Old iron axles, net tons	16.50 to 17.50
Heavy melting scrap, gross tons.	13.00 to 14.00
Stove plate, net tons	**10.50 to 11.50**
Wrought turnings	5.50 to 6.50
Cast borings, net tons	**4.50 to 5.50**
Car wheels, gross tons	16.50 to 17.50

PHILADELPHIA.

Better Tone Results From Action of New York Meeting.

Feb. 4.

Pig Iron.—Despite rather light business, prices are well maintained by the makers of standard brands, and no disposition is shown to attract trade by making material concessions. Most furnace men are indeed more confirmed than ever in their determination to close their plants rather than operate at a loss, and recent shutdowns have brought production in this territory nearer to the vanishing point than it has been for many years. The efforts of buyers to break prices have led to sales here by a western Pennsylvania furnace of pig iron as low as $17.50 or $17.75 for No. 2X, but other makers have refused to go below the scheduled figure, $18.25. There has been a considerable volume of inquiries and a number of orders, mostly for small amounts, but new business cannot yet be considered very encouraging. Foundrymen generally report trade as very dull, and until they feel more assured of improvement in the near future they will not become large buyers. Some furnace men believe that the change for the better will come in two or three weeks, while others think there will be little improvement until restriction in production has been pushed to such a point that there is an absolute scarcity of iron, with the demand exceeding the supply. The general feeling is undoubtedly more optimistic. Prices may be quoted as unchanged as follows:

No. 1X Foundry	$18.75 to 19.25
No. 2X Foundry	18.25 to 18.50
No. 2 Plain	17.75 to 18.00
Standard Gray Forge	16.50 to 16.75
Basic	17.25 to 17.50
Low Phosphorus	23.50 to 24.00

New Material.—The meeting of the leading interests in New York last week has already served to give the market a more lively tone. Now that buyers have been given clearly to understand that prices will be maintained, they have shown more disposition to purchase, and business in the last two or three days has shown a decided gain. This applies particularly to plates and structural material, bar iron prices continuing very unsatisfactory and being shaded in some instances as low as 1.40c. Mills generally continue in operation at about half their capacity, but with the improvement in demand it is expected that some of them will soon be increasing their output. There is a very general disposition to hold up prices, which may be quoted as follows: Beams, channels and angles, as according to specifications, 1.85c to 2c; refined iron bars, 1.40c to 1.55c; steel bars, 1.75c to 1.85c; plates, 1.85c to 1.90c.

Old Material.—Scrap has shared in the improved feeling, and sales of small lots have served to make up the prices of several varieties. It cannot be said that the mills have as yet started a buying movement, but the prospect of brighter days has given

a feeling of greater strength to the market. Prices may be quoted as follows:

Old steel rails	$13.50 to 14.00
No. 1 steel scrap	12.50 to 13.00
Old steel axles	17.50 to 18.00
Old iron axles	20.00 to 21.00
Old iron rails	16.00 to 17.00
Old car wheels	17.50 to 18.00
Choice scrap R. R. No. 1 wrought	14.00 to 14.50
No. 1 yard scrap	14.50 to 15.00
Machinery scrap	15.50 to 16.00
Low phosphorus scrap	17.00 to 17.50
Wrought iron pipe	11.00 to 11.50
No. 1 forge fire scrap	11.00 to 11.50
No. 2 forge fire scrap, ordinary.	8.50 to 9.00
Wrought turnings	9.00 to 9.25
Axle turnings, heavy	10.00 to 10.50
Cast borings	7.50 to 8.00
Stove plates	12.50 to 13.00

NEW YORK.

Stronger Sentiment Results from New York Meeting.

Office of THE IRON TRADE REVIEW,
Room 1005 No. 90 West St., Feb. 4.

Pig Iron.—This city was the scene late last week of a number of meetings of pig iron producers for the consideration of market conditions. As a result there have been no announcements of radical changes, but instead it is understood that eastern producers of foundry iron will continue the price level maintained during January, $18.25, delivered Jersey City, for No. 2X, and $19.50, delivered to New England points. Basic is selling at $17.25, delivered. A meeting of basic furnace interests was held Thursday, but nothing unusual developed. The foundry melt is not increasing to any great extent and the hand-to-mouth policy is being worked to the limit on what iron is needed. The opening days of February have brought out one inquiry for 1,000 tons in this territory, at least two for 500 tons each, and several for slightly smaller lots. In some instances, however, consumers have declined to purchase after receiving tenders and are carrying themselves along on what little iron they may chance to have or on small buys. Although not to so great an extent as finished materials, the pig iron market reflects a stronger tone because of the New York co-operation conference. Interest is now centered in the outcome of the iron ore conference at Cleveland Saturday. We quote, tidewater delivery, as follows:

Northern Foundry No. 1	$18.50 to 19.00
No. 2X Foundry	18.25
No. 2 Plain	17.50 to 18.00
Malleable	19.00 to 19.50
No. 2 Southern Foundry	17.50 to 17.75
Basic	17.00 to 17.50

Ferro-Manganese.—The market is inactive. It develops that the 1,500-ton inquiry referred to a week ago was for consumption during next year, the inquirer figuring that a good profit could be made by laying in a stock of ferro at present low prices, but few concerns were ready to make tenders for such advanced delivery and the project will probably be dropped. The level is about $47, seaboard.

Finished Materials.—A distinctly better feeling has been brought about by the sentiment against any reduction in prices expressed at the conference of manufacturers in this city last week. There had been rumors of an impending cut in plates and steel bars in particular, and this announcement had already had the effect of strengthening both lines. Bar iron also is sympathetically stronger. There have been a number of sales at 1.40c, Pittsburg, and even lower, but the tendency is now to decline business except at a price nearer that of steel bars, and at a special meeting of the Eastern Bar Iron Association, to be held Wednesday, the price question will again be taken up. So far, there has been no official reduction from the 1.40c, Pittsburg, base.

In structural materials, the most important development of the week has been the signing by the city and the approval of the comptroller of the contracts for dock work, let some months ago. There is every indication that this will now go ahead immediately. The New York Central is to readvertise for bids on the first section of its new terminal facilities; the award on the second is still pending.

Structural bookings are estimated at about 30,000 tons, of which perhaps 12,000 went to the leading interest. Railway work shows distinct improvement. The American Bridge Co. has taken two 500-ton bridges and inquiries are coming out on 4,000 tons for the Northwestern and 2,000 for the St. Paul, beside the New York Central work now pending, about 10,000 tons. The LaSalle hotel job is still pending and considerable other good work is being figured on.

Cast iron pipe business is quiet, though inquiries from municipalities continue numerous. Considerable Cuban business is developing, but is not attractive to American foundries. There is better business in plates, which are extremely firm, and some fair inquiries are current. We quote: Angles, 3 to 6 inches x ¼-inch and heavier, 1.86c; beams, 3 to 15 inches, 1.86c; tees, 3 x ¼-inch and heavier, 1.91c; plates, car loads, tanks, 1.86c; marine boiler, 2.26c; bar iron, 1.56c; soft steel bars, 1.76c; sheets, No. 28, black, 2.66c.

Old Materials.—The market is featureless. There is little call for cast scrap, which heretofore has been fairly active, but some few inquiries are coming out for pipe, borings and turnings in small lots. On these buyers are not inclined to meet sellers' ideas of prices and the small lots changing hands are at the level offered by those few mills now operating. We quote, gross tons, New York delivery, as follows:

Old iron rails	$18.00 to 18.50
Old steel rails, re-rolling	14.50 to 15.00
Relaying rails	21.00 to 22.00
Old car wheels	17.00 to 18.00
Old iron car axles	17.00 to 17.50
Old steel car axles	14.50 to 15.00
Heavy melting steel	9.50 to 10.00
No. 1 railroad wrought	12.00 to 12.50
Iron track scrap	11.00 to 11.50
Wrought pipe	8.50 to 9.00
Cast borings	4.50 to 5.00
Wrought turnings	6.00 to 6.50
Heavy cast scrap	14.00 to 14.50
Railroad malleable	11.00 to 11.50
Agricultural malleable	10.00 to 10.50
Stove plate	10.00 to 10.50
Grate bars	9.50 to 10.00

ST. LOUIS.

Increase in Pig Iron Inquiries, but Few Orders Are Taken.

Feb. 3.

Pig Iron.—Aside from an increase in inquiries in the St. Louis territory last week, business remains about the same as reported for the previous week. No orders are being placed except for prompt shipment. The largest inquiry for this territory has been for 1,000 tons of No. 1 and No. 2 for shipment over the first half of the present year. It is reported that one furnace booked several thousand tons of No. 2 at $12.50 per ton, Birmingham basis, but this report has not been confirmed. The furnace company with which this order is reputed to have been placed denies booking it at that price. Spot iron is being sold at $13.50 Birmingham basis. Our quotations, f. o. b. Birmingham, to which $3.75 freight is to be added, follow:

No. 1 southern	$13.50 to 14.00
No. 2 southern	13.00 to 13.50
No. 3 southern	12.50 to 13.00
No. 4 southern	12.00 to 12.50

Coke.—The coke market remains dull. Very little new business is in sight. Prices for the best selected Connellsville 72-hour foundry coke run from $3 to $3.25 a ton for prompt and future shipment. High sulphur Connellsville foundry can be had at $2.25 to $2.50 per ton. Forty-eight Connellsville furnace coke is quoted at from $2 to $2.25 per ton. Smelter coke is held at $1.50. The freight to East St. Louis is $2.80 a ton, and to St. Louis $2.90 per ton.

Old Material.—The market is practically unchanged. Our quotations run as follows:

Old car wheels, gross ton	$18.00
Cast scrap, No. 1 R. R., net ton	11.00
Cast scrap, heavy machinery, net ton	12.50
Cast scrap, light, net ton	10.00
Old iron axles, net ton	14.00
Old steel axles, net ton	12.50
Steel turnings, net ton	6.00

EARS.

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NAME OF MINE.	1907	1896	1897	1898	1899	1900	1901	1902	1903	1904	1905	TOTALS
Mesabi Range									1,370			1,370
Adams	1,136,5	10,821	98,847	104,510	93,025	119,940	63,429	110,993	107,886	81,164	138,395	1,353,792
Adriatic	70,1	55,809	149,594	295,821	337,807	404,645	477,212	646,203	522,035	374,944	423,698	5,362,941
Agnew	149,(						18,750	100,864	31,901	16,577		311,608
Ajax (Kanawha)							17,326	64,664	123,236	151,114	133,246	865,200
Albany	437,										16,625	75,425
Alberta	31,(				80,915	51,639	36,593	129,035	246,581	132,420	210,388	1,598,242
Alexander	120,											67,419
Auburn		20,318	643,402	724,768	940,513	929,937	929,701	956,812	2,088	4,242	10,248	236,320
Bessemer	78,(								704,051	541,324	902,628	15,203,149
Biwabik	803,	87,202	24,623	14,199	126,290	97,531	19,963	186,798				14,883
Brunt	178,	93,707	98,283	250,687	117,295	53,342	77,799	112,704	5,051	1,617	27,883	942,703
Burt	1,501,	44,526	95,210	128,233	147,346	197,770	230,614	195,555	117,096	180,983	8,085	2,460,997
Canisteo	5,(				20,210	38,209					152,255	1,733,969
Canton		3,395	41,942	76,877	100,902	141,148	178,800	183,052	111,851			58,419
Cass	36,			5,009	10,980	49,203						837,967
Chisholm	258,	47,081	31,062	49,381	7,458			2,816	5,365		21,051	155,550
Cincinnati	6,(										1,819	1,319,646
Clark	319,					1,316		10,382	9,863	11,267	11,973	18,719
Columbia		35,136	37,594	93,663	74,235	35,756	15,396	130,798	95,877	153,452	233,858	371,289
Commodore	477,											2,346,474
Corsica	172,									11,988		7,949
Crosby	227,							14,455	61,694	132,380	77,370	11,988
Croxton	34(	14,643		33,851	43,316	98,550	123,261	42,470	100,751	68,318	191,265	405,854
Cyprus	260,						11,444	7,599	1,294	4,737		1,635,235
Day		94,645	96,032	69,865	110,269	72,413	149,966	123,331	79,420	136,232	124,450	40,036
Diamond						11,008	20,355	74,596	53,828	38,288	9,704	1,393,503
												210,683

iron pipe plants are running on almost lows: mated output.

NAME OF MINE.	1907	1908	Prior to 1891	1891	1892	1893	1894	1895	1896	1897	1898	1899	1900	1901	1902	1903	1904	1905	TOTALS.
Mesabi Range																			
Adams	1,136,513	1,238,350						59,141	234,562	170,738	390,860	720,474	777,346	829,118	1,242,923	1,109,750	940,105	1,140,984	9,990,864
Adriatic	70,187	3,294																	73,481
Agnew	149,084	163,260													45,582	108,847	96,435	44,651	607,859
Ajax (Kanawha)		9,057										14,963	64,218	41,300	24,829	23,932	912	28,439	107,650
Albany	437,521	356,371														109,608	153,433	241,186	1,298,119
Alberta	31,032																		31,032
Alexander	120,382	60,547																15,073	195,952
Auburn							108,210	376,970	131,478	175,263	235,630	385,992	263,692	427,510	38,283				2,143,028
Bessemer	78,012	131,791															86,303	112,630	408,736
Biwabik	803,750	807,374				151,500	90,048	247,069	242,565	427,464	383,180	553,836	924,868	410,074	623,127	807,511	647,614	1,092,987	8,212,967
Brunt	178,935	75,401																	254,336
Burt	1,501,272	1,376,875																1,860,452	4,738,599
Canisteo	5,454																		5,454
Canton						24,416	213,853	359,020	16,261			99,498							713,048
Cass	39,121	65,961														50,155	29,554	59,552	241,343
Chisholm	258,793	379,156												34,573	200,629	168,831	130,732	231,296	1,404,010
Cincinnati	6,369	1,373				26,372		17,187	57,324	32,912		246						965	142,748
Clark	319,983	274,394											63,071	199,566	350,799	300,492	256,873	358,091	2,123,269
Columbia														15,627				1,360	16,987
Commodore	477,203	283,401				65,137	7,213		22,063	60,798	80,494	152,947	278,416	35,546	65,833	20,436	249	146,901	1,676,637
Corsica	172,226	100,606												26,838	59,292	34,043	30,131		423,136
Crosby	227,265	115,373																	342,638
Croxton	344,853	162,533													18,594	100,297	348	130,228	761,853
Cyprus	260,948	192,144														121,818	244,343	235,351	1,054,604
Day											18,651	1,975			106,516	107,781	84,530		319,453
Diamond	171																		171
Duluth	93,120	158,336				37,626					112,155	165,435	128,587	150,024	150,220	150,053	149,819	142,172	1,437,547
Elba	134,488	255,580									564	9,547	121,707	224,630	207,454	93,616	123,425	125,724	1,296,735
Fayal	1,878,812	1,634,853						136,601	248,645	642,939	575,933	1,072,257	1,252,504	1,656,973	1,919,172	1,460,601	975,102	1,358,922	14,813,314
Forest	4,840	41,647															85,280	99,785	231,552
Fowler	34,014																		34,014
Franklin	30,926	66,935				46,617	223,399	286,423	231,086	30,128	200,400	60,000	168,524	39,299	111,085	92,019	65,528		1,652,369
Frants	907	11,068															62,884	70,210	145,069
Genoa	108,610	179,468							17,136	309,514	279,677	276,559	253,651	332,022	399,719	303,700	244,150	281,081	2,985,287
Gilbert	100,178																		100,178
Glen	205,426	279,424													23,875	171,705	280,412	287,835	1,248,677
Grant															51,946	18,928	44,413	49,227	164,514
Hartley	334,646																		334,646
Hawkins	270,984	284,588																	950,494
Hector (Hale)	65,952	37,221				3,616	24,167	31,004	70,006	13,728		18,807	32,901	30,929	54,289				387,610
Higgins No. 2	173,439	341,319															35,286	238,598	4,996
Hobart	7,339	975																	788,642
Holland	16,908	95,472																	8,314
Holman	8,068																	158,484	270,864
Hull	157,366	282,592																	8,068
Hull-Rust	2,900,493	1,690,311																233,065	673,023
Iroquois	254,329	190,971																	4,590,804
Jennings	99,512	84,715														17,562	50,215	61,109	574,186
Jordan	61,996	110,768																	184,527
Kinney	145,969	57,641													147,931	190,024	97,474	185,854	794,047
La Belle	56,146	50,466														32,352	6,225	85,161	331,418
Lake Sup. Group															70,753	48,298	89,554	78,597	393,814
Larkin (Tesora)	22,040	12,001						58,123	67,659	259,912	135,404	154,326	284,023	594,761	766,311	1,226,066	1,415,884		4,962,469
La Rue	301,522	175,670																	34,041
Laura	149,410	138,000														53,335	105,170	197,192	832,889
Leetonia	301,368	304,989													16,453	79,286	3,778	27,207	414,135
Leonard	137,316	254,368													28,784	200,163	228,536	352,004	1,419,844
Lincoln	297,870	367,192														10,591	151,952	297,011	851,228
Longyear															87,908	279,399	153,822	275,777	1,461,968
McKinley	17,706														22,788	81,604	221	16,778	124,391
Mahoning	1,564,332	1,274,232						117,884	167,245	519,892	520,751	750,341	911,021	765,872	1,038,645	1,009,446	706,325	1,011,661	17,706
Malta	82,065	115,763										28,615	65,346	126,299	222,640	11,675	66,641	139,853	10,357,047
Mariska	137																		858,897
Mayas	113,521	107,244																	137
Miller	279,453	234,071																118,520	220,765
Minorca	154,661	155,541													35,499	115,886	121,739	117,653	627,044
Mohawk	123,870	92,715																	700,979
Monroe	156,809	310,839																13,730	221,585
Morris	2,056,388	1,809,743																1,070,937	481,378
Morrow	34,935	61,073																60,725	4,957,068
Mtn. Iron (Aetna)	1,973,519	2,563,111			4,245	121,463	573,440	371,274	159,744	773,538	650,955	1,137,970	1,001,324	1,058,160	1,617,772	1,348,714	1,168,855	2,495,089	277,725
Myers	153,770	228,451																188,568	16,992,173
Nassau	19,172																		570,789
Onandaga	521																		19,172
Pearce	68,886	66,386																	521
Penobscot															54,884	50,204	235		240,595
Pettit	36,074	82,757									11,933	29,652	85,619	146,641	221,080	209,531	1,615		706,071
Pillsbury	489,718	33,546													17,278	52,706	27,088	140,239	356,142
Roberts											99,691	106,487	101,032	120,723	238,122	229,133		161,924	1,580,376
Rust	215,365	284,517									18,614	57,847	41,965	42,756	28,972				190,154
Sauntry-Alpena																		272,114	769,986
Scranton												53,004	68,560	328,739	249,837				700,140
Sellers	155,060	241,031						47,433	153,037		112,765	174,867	56,280	34,918	193,428	251,631	1,168		1,168
Sharon														56,810	224,526	48,199	207,990	261,501	1,889,941
Shenango	387,093	983,717																	329,535
Sparta		235															51,712	213,097	1,035,519
Spring	15,257										66,722	226,156	237,143	202,144	156,426	227,444	40,458	59,692	1,244,197
Spruce (Cloquet)	610,457	674,602					5,628	47,700	95,280	12,215		1,621	101,675	279,515	543,203	587,153	589,319	606,205	15,257
St. Clair																6,148	26,748	61,792	4,155,663
St. Paul	113,200	24,230																	94,088
Stephens																			137,430
Stevenson	1,142,977	1,014,500														87,055		367,764	454,819
Susquehanna	137,207	20,984												56,031	666,273	1,434,681	1,014,582	1,652,021	8,409,079
Tener	180,903	174,809																1,428,614	158,191
Troy	100,730	146,849																58,136	423,348
Union	61,825	20,091														15,099	12,759	87,584	363,021
Utica	804,864	268,281												8,297	93,109	103,522			378,940
Victoria	90,090	64,820														91,496			1,044,975
Virginia (G	1,015,717	5,674				125,015	541,954	622,712	955,739	749,499	560,848	293,651	417,473	5,420	5,131	156,180	120,697	185,944	154,910
Wacoutah	158,692	6,766														5,866	5,395	402,224	5,713,318
Webb	113,334	165,604																71,235	165,458
Williams (N. Cin'ti)	35,267	17,685						3,046	11,249			12,357	18,238						350,173
Wills															12,158			4,550	97,842
Winnifred	94,867	3,415														39,179	81,686		16,708
Yates	210,726	265,239															53,179	58,174	219,147
Yawkey	15,453																		587,368
Miscellaneous						13,858	2,140												15,453
																			15,998
Total	27,492,949	23,792,553			4,245	613,620	1793,052	2,781,587	2,882,079	4,275,809	4,613,766	6,626,384	7,809,535	9,004,890	13,342,840	12,892,542	12,156,008	20,153,699	150 235 558
Gogebic Range.																			
Anvil	89,923	79,493	127,441	73	42,090		13,297	68,064	57,483		5,037			1,101	135,502	11,309	45,595	82,118	708,526
Ashland	298,056	341,841	1,124,366	267,439	231,896	66,067	83,020	126,096	91,149	111,625	123,208	154,615	232,961	286 399	301,824	274,138	344,102	409,131	4,807,933
Atlantic	91,759	97,689	1,349					70,989	60,727	50,307	38,058	19,964	135,955	190,135	190,213	148,385	77,224	208,039	1,380,813
Brotherton	104,224	147,281	204,993	46,574	130,833	18,905	47,148	40,567	50,490	46,186	73,198	78,858	89,804	103,109	53,255	94,986	84,870	137,351	1,552,632
Cary (and Superior)	209,407	216,992	325,070	121,186	106,484	28,578	16,559	52,349	38,821	37,308	43,162	62,524	125,496	179,374	136,895	89,221	61,860	146,414	2,094,819
Castile	6,157	2,108																	8,265
Chicago									504				633		44,625	22,965			68,727
Colby	94,480	113,001	1,217,025	9,619	69,968	59,346	32,616		48,492	22,921	152,875	163,239	32,572	23,475	22,526	54,915	81,141	83,736	2,221,947
Davis (Wisconsin)			1,497		21,754	15,210		10,253				5,029	3,569		31,530	734	11,225	3,160	103,961
Eureka	57,904	37,525	23,794	13,907	10,655	31,385	18,329	26,105	4,544										224 148
Geneva																7,108			7,108
Germania	19,319	9,436	296,003	22,383	4,283	7,964				1,015		1,255	986	10,358	20,502	2,246	23,364	2,973	422,087
Hennepin		5,768	169,169	15,759									7,728	21,475	36,383	862		2,589	239,733
Iron Belt	17,347	3,227	191,919	1,506	161,635	23,976	45,109	148,228	81,351	96,763	58,418	105,934	54,664	43,883	79,121	25,353			1,138,434
Ironton	199,968	106,158	58,068	300								7,977	25,047		8,555	16,875	23,197	41,314	478,459
Jack Pot					3,944	1,651				1,265			33,893	19,988	102	31,709	6,538		99,090
Meteor (Comet)			2,882	10,144	54,779	9,604	11,782					332	7,844	34,140	19,117	6,156	59,587		216,367
Mikado	168,891	154,043						4,788		11,397		10,324	1,090	91,846	98,834	108,709	25,611	140,740	811,273
Montreal	159,783	139,202	304,802	108,684	73,409	34,299	46,037	138,882	131,531	191,106	270,776	153,307	107,524	72,945	136,354	93,139	163,021	107,854	2,402,635
Newport	551,873	549,745	273,464	105,606	165,962	109,718	150,392	157,821	142,369	150,979	196,953	264,711	217,201	190,448	141,571	279,905	171,931	138,023	4 257,572
Norrie Group	1,109,085	1,241,468	3,633,959	572,352	1417,943	755,600	1030,834	1,204,323	585,221	990,899	1,057,957	1,148,907	1,098,742	1,083,393	1,483,013	1,145,711	831,558	1,527,128	22,322,627
Ottawa (Odanah)	46,424	57,219	64,020		6,711	3,956	2,437								26,141	87,929	30,420	21,986	347,243
Palms		5,622	96,98	32,227	102,382	2,658	37,911	46,965	114,108	207,153	175,925	154,705	139,658	7,603	32,113	60,800	53,718	13,953	1,284,489
Pence			27,26						13,185	120									40,566
Pike	24,922	17,934												3,434	6,346	6,343	115	11,161	70,255
Puritan (Ruby)			85,612	913											21,788		1,259		109,572
Shores									12,196	16,102	15,691	11,819							55,808
Sunday Lake	101,899	86,879	33,515	64,902	56,046	22,876	34,323	20,970	89,441	45,815		12,526	74,097	89,997	144,630	91,383	50,625	79,209	1,102,133
Tilden	312,496	169,697		28,415	233,356	135,118	209,077	418,188	250,205	276,890	287,203	500,830	481,909	446,670	468,672	211,534	204,581	188,104	4,822,945
Upson															11,065	310			11,375
Yale (West Colby)	38,010	56,657													12,836	26,043	46,211	46,860	60,224	286,841
Miscellaneous			164,205	17,488	24,619		30,597	1,950											238,859
Total	3,637,907	3,641,985	8,490,422	1839,574	2971,991	1329,385	1809,468	2,547,976	1,799,971	2,258,236	2,498,461	2,795,856	2,875,295	2,938,155	3,654,929	2,912,708	2,398,287	3,706,736	54,107,342
Miscellaneous — (In Wisconsin)																			
Iron Ridge	3,966	61,624														17,913	19,558	39,978	143,039
Illinois	72,180	67,118															47,922	71,413	258,633
Total	76,146	128,742														17,913	67,480	111,391	401,672

NAME OF MINE.	1907	1906	Prior to 1891	1891	1892	1893	1894	1895	1896	1897	1898	1899	1900	1901	1902	1903	1904	1905	TOTALS
Menominee Range.																			
Alpha																1,370			1,370
Antoine (Clifford)	100,996	195,855						27,931	110,821	98,847	104,510	93,025	119,940	63,429	110,993	107,886	81,164	138,395	1,353,792
Aragon	441,636	431,000	48,354	96,829	167,948	127,901	138,209	183,296	95,809	149,594	295,821	337,807	404,645	477,212	646,203	522,035	374,944	423,698	5,362,941
Armenia	36,665	27,882	76,924					2,045						18,750	100,864	31,901	16,577		311,608
Baltic	189,119	186,495												17,326	64,664	123,236	151,114	133,246	865,200
Breen	20,366	21,004	17,430															16,625	75,425
Bristol	345,676	298,031			57,352	9,612						80,915	51,639	36,593	129,035	246,581	132,420	210,388	1,598,242
Calumet	51,646	15,773																	67,419
Caspian	138,867	80,875														2,088	4,242	10,248	236,320
Chapin	865,308	943,425	3,218,543	488,749	660,052	489,134	235,895	618,589	420,318	643,402	724,768	940,513	929,937	929,701	956,812	704,051	541,324	902,628	15,203,149
Chatham	14,883																		14,883
Columbia			126,169	70,770	57,682	22,426	10,300	70,867	87,202	24,623	14,199	126,290	97,531	19,963	186,798			27,883	942,703
Commonwealth		6,346	716,894	134,982	249,113	151,291	174,921	208,880	93,707	98,283	250,687	117,295	53,342	77,799	112,764	5,051	1,617	8,085	2,460,997
Crystal Falls	114,158	111,871	5,315					13,037	44,526	95,210	128,233	147,346	197,770	230,614	195,555	117,096	180,983	152,255	1,733,969
Cuff												20,210	38,209						58,419
Cundy									3,395	41,942	76,877	100,902	141,148	178,800	183,052	111,851			837,967
Dober	90,358										5,009	10,980	49,203						155,550
Dunn	141,992	91,476	451,564	162,721	133,666	58,590	24,538	90,885	47,081	31,062	49,381	7,458			2,816	5,365		21,051	1,319,646
Eleanor (Ap'l'ton)	1,677	3,121			4,377	5,618		2,107										1,819	18,719
Fairbanks (P't R.)	75,805	28,321	158,546	45,435	18,390								1,316		10,382	9,863	11,257	11,973	371,289
Florence	178,955	169,459	960,064	48,806	48,246	9,634	2,726	22,820	35,136	37,594	93,663	74,235	35,756	15,396	130,798	95,877	153,452	233,858	2,346,474
Fogarty	7,949																		7,949
Forest																	11,988		11,988
Genesee	38,984	80,971													14,455	61,694	132,380	77,370	405,854
Great Western	234,492	311,218	222,488	62,464	87,487	661			14,643		33,851	43,316	98,550	123,261	42,470	100,751	68,318	191,265	1,635,235
Groveland	13,913			1,049										11,444	7,599	1,294	4,737		40,036
Hemlock	117,181	100,437		35,531	65,459	11,323		949	94,645	96,032	69,865	110,269	72,413	149,966	123,331	79,420	136,232	124,450	1,393,503
Hiawatha		20				1,683		1,201					11,008	20,355	74,596	53,828	38,288	9,704	210,683
Hilltop		7,820										3,496	6,410	2,503					20,229
Hollister	6,371																		6,371
Hope					15,543	2,275									3,373	7,339			28,530
James	2,360																		2,360
Keel Ridge			59,465		5,997	3,298		19,441				4,900							93,101
Kimball	16,224																		16,224
Lamont (Monitor)	42,090	89,980	43,487	26,226	42,819	13,777	2,600					67,652	31,323		47,267	43,736	29,393	74,991	555,341
Lincoln	714	5,890		1,813	26,019	8,757						43,622	72,959	19,727	7,747	15,606	17,577	19,539	239,970
Loretto	99,779	140,396				8,131	55,983	53,160	34,334	54,104	68,447	64,824	61,219	54,985	128,300	87,939	54,720	118,738	1,085,053
Mansfield	183,532		18,303	49,836	69,259	69,558				37,182	60,739	86,607	90,155	74,113	31,181	51,440	79,163	38,584	939,652
Michigan Explo. Co.	39,819	146				505	77	1,071		216					53,272			58,088	153,194
Millie (Hewitt)	18,691	36,815	103,232	5,889	6,780		13,062	10,924	21,815	10,374	17,430	15,194	14,922	12,133	25,935	40,860			354,056
Monongahela														2,397		6,913			9,310
Munro	46,834	47,454														8,739	32,332	92,183	227,542
Nanaimo	53,778	91,792	114,366	13,200													9,086	91,238	373,460
Northwestern			17,206												1,324	17,280			35,810
Penn Iron M'ng Co.	381,128	496,582				280,450	175,274	290,622	179,917	237,886	223,713	229,651	197,606	358,126	273,443	343,543	141,948	423,244	4,233,133
Pewabic	457,796	493,891	26,991	64,507	115,273	165,745	304,010	262,551	272,587	279,855	305,072	530,129	374,043	507,786	530,291	489,175	372,791	533,413	6,086,906
Quinnesec			283,323					761				11,050	25,967	66,383	62,531	49,708	33		499,756
Riverton		161,701										2,262	71,004	119,860	215,850	97,633	81,543	82,611	832,467
Saginaw (Perkins)	26,080	21,017	395,064					2,161											444,322
Sheridan			1,697	7,137	45,745	2,234		16,754	3,419	146		31,104	8,063						116,299
Tobin	237,781	235,267												18,957	55,238	45,386	113,669	166,529	873,427
Verona													5,143	11,475	43,245	50,910	20,202		130,975
Vivian	48,493	122,577													40,384	12,122	81,354	90,426	395,356
Youngs	92,632	47,583																10,926	151,141
Miscellaneous			5,754,464	508,675	384,292	23,594	354	23,746	112	661									6,695,898
Total	4,964,728	5,109,088	12,819,859	1824,619	2261,499	1466,197	1137,949	1,923,798	1,560,467	1,937,013	2,522,265	3,301,052	3,261,221	3,619,053	4,612,509	3,749,567	3,074,848	4,495,451	63,641,213
Marquette Range.																			
American	13,764	419	76,253	21,604	15,076														127,116
Austin	195,950																		195,950
Bessie		1,046		847											5,007	29,718		21,879	59,097
Beaufort (Ohio)	78,029		90,217										1,583	4,338	59,781	134,648	25,781	38,306	432,683
Breitung Hem. No. 2	59,667	38,671														7,854	9,869		116,061
Cambria	135,145	40,628	589,209	34,662	41,549	30,445	47,218	41,656	95,086	110,648	102,623	124,930	80,432	68,907	63,976	41,168	84,852	81,791	1,814,925
Champion	107,577	115,007	2,521,114	133,413	109,979	61,648	42,788	100,398	113,375	141,728	163,190	215,074	113,743	99,026	205,721	74,238	174	64,680	4,382,573
Cleve'd-Cliffs Gr'p	1,030,928	1,330,944	234,625	221,788	310,907	218,105	143,706	221,153	513,119	718,408	869,482	1,011,048	881,021	860,484	1,104,864	810,845	743,263	1,288,416	16,773,512
East New York			4,495,031	50,293	35,175	911							27,987	31,696	38,761	22,523	7,299	33,095	327,604
Empire	40,555		79,864																40,565
Foxdale														4,647	15,015	5,053	3,429	3,303	31,447
Hartford	328,161	364,801	566		5,678	6,513			1,532						7,440	20,085	179,980	322,209	1,236,965
Imperial	55,755	5,076	38 460	18,552	7,194							23,235	62,321				727	1,661	212,982
Jackson	61,345	5,066	3,069,936	92,979	92,567	51,009	32,298	42,186	80,710	79,102	55,012	88,230	31,714	38,271	15,449	5,409		33,180	3,874,413
Lake Angeline	283,373	269,116	1,802,457	241,605	287,517	351,973	355,453	313,555	342,251	489,685	460,335	464,988	389,128	481,574	304,125	310,950	262,486	374,183	7,764,752
Lake Superior	674,006	635,671	5,042,461	308,831	366,715	329,610	344,758	342,439	459,576	376,761	686,563	682,595	709,143	635,642	832,796	604,829	590,339	727,378	14,350,173
Lillie	80,545	32,781	242,970	19,551	29,005	68,861	78,388	54,285	107,532	112,781	211,023	196,200	114,990	98,788	79,919	77,454	63,209	9,868	1,678,150
Lucy (McComber)		85	418,307	27,683	26,326	21,964				10,033	11,846								516,244
Maas	32,378																		32,378
Magnetic(st'k pile)		292																	292
Mary Charlotte	155,633	257,088														94,303	48,885	221,738	717,647
Moore													4,648	37,655			25,828		68,131
Negaunee	296,170	253,448	205,369	64,218	85,846	69,732	132,581	90,682	175,394	182,169	191,330	195,573	126,829	234,713	204,286	224,665	145,132	289,564	3,117,091
New York (York)			1,055,395		11,220	25,000	21,487					6,642	3,327						1,123,071
Palmer		13,131							1,041										14,172
Princeton (Sw'nz'y)	177,853	166,894	154,696	7,301	29,403	19,096		6,595			25,247	55,802	75,037	67,051	118,048	84,223	76,461	129,079	1,192,794
Queen (Blue)	309,917	221,096	676,423	479,509	379,719	120,673	252,469	204,957	323,057	242,293	61,022	342,978	398,298	400,845	418,044	254,658	311,479	253,377	5,630,814
Republic	170,554	177,220	3,547,967	191,127	167,991	64,195	105,719	174,027	127,360	124,342	140,312	137,085	130,126	104,604	157,646	155,415	124,506	150,699	5,950,895
Richmond	35,156	89,563							1,088	4,630	24,464	4,613	51,303	54,181	50,041	55,593	68,134	86,129	524,895
Rolling Mill	49,204		110,177							3,975			22,585	22,815	24,874	6,786		28,766	388,630
Star West (Wheat)				4,412			5,550	51,207	9,658	942		6,716	15,987						204,649
Stephenson	6,305		670,947																6,305
Volunteer	10,022	38,544	14,108	92,699	127,130	69,561	26,946	32,672	53,216	1,617		29,983	47,578		32,736	7,396	71,870	106,281	1,419,197
Webster			109,576										20,797						34,905
Winthrop			7,515,659	122,042	191,658	180,071	134,365	119,120	150,496	106,894	122,592	171,318	148,945	109	129,496	72,433			1,759,115
Miscellaneous				379,126	344,514	118,213	335,604	302,908	49,730	9 027									9,084,781
Total	4,888,078	4,057,187	32,761,787	2512,242	2665,169	1837,580	2059,330	2,097,838	2,604,221	2,715,035	3,125,039	3,757,010	3,457,522	3,245,346	3,868,025	3,040,245	2,843,703	4,210,522	85,245,874
Vermillion Range.																			
Chandler	245,684	318,990	706,734	373,969	651,655	435,930	558,050	605,024	471,545	438,365	715,919	808,359	644,801	627,379	645,786	460,548	422,162	365,739	9,096,689
Pioneer	830,700	766,853	15,156	3,079	2,651			40,054	149,073	207,103	123,183	339,897	450,794	678,310	673,863	596,735	505,432	653,682	6,036,565
Savoy	43,320	106,933										81,022	170,446	212,008	243,937	169,616	74,866	91,775	1,193,923
Sibley	236,835	271,496										5,169	4,670		78,304	113,595	122,783	251,170	1,074,022
Soudan (Minnesota)	102,977	146,503	2,110,915	517,570	498,353	370,303	390,463	432,760	448,707	592,196	426,040	457,732	325,020	208,284	275,168	175,114	70,713	205,002	8,153,820
Zenith	235,751	181,580			14,991	14,388			18,765	40,817		79,323	60,089	60,082	167,205	161,091	86,557	109,818	1,230,457
Total	1,685,267	1,792,355	2,832,805	894,618	1167,650	820,621	948,513	1,077,838	1,088,090	1,278,481	1,265,142	1,771,502	1,655,820	1,786,063	2,084,263	1,676,699	1,282,513	1,677,186	26 785,426
GRAND TOTAL	42 245 070	38,522,239	56.904.903	7071,053	9070,554	6067,403	7748,312	10,429,037	9,934,828	12,464,574	14,024,673	18,251,804	19,059,393	20,593,507	27,562,566	24,289,674	21,922,839	34,353,456	380417085

MINES NOT PRODUCING SINCE 1897.

MARQUETTE RANGE.

Ames	6,298
Barnum (Iron Cliffs)	801,851
Bay State	16,637
Boston	62,542
Braastad (Mitchell)	136,636
Braastad (Winthrop)	831,445
Chicago	9,012
Columbia (Klomin)	94,813
Curry	16,671
Detroit	140,841
Dexter	118,512
Dey	2,709
East Champion	76,002
Edison	893
Erie	8,136
Etna	1,091
Fitch	31,817
Foster	171,893
Gibson	16,357
Goodrich	49,754
Grand Rapids (Davis)	110,736
Hortense (Champion)	30,554
Humboldt	723,961
Iron Cliffs	1,700,537
Iron Mountain	393
Manganese	6,359
Marquette	152,907
Michigamme	880,362
Milwaukee	375,451
Mesabi's Friend	16,043
National	150,216
Negaunee Con. Wks.	12,708
N. Republic	289
N. Y. Hematite	37,587
Northwest	1,687
Nonpareil	23,395
Norwood	5,753
Ogden	986
Pascoe	59,806
Pendill	45,993
Phenix	59,114
Pioneer	15,409
Platt	73,844
Primrose	6,040
Quartz	491
Republic Reduction Co.	47,174
Richard	8,261
Riverside	16,160
Saginaw	451,424
Salisbury (Iron Cliffs)	686,411
Sam Mitchell	17,780
Samson (Argyle)	267,805
Schadt	1,261
Section 12	21,887
Spurr	164,244
Taylor	32,970
Titan	90,371
West Republic	133,077
Wetmore	50,870
Wheeling	10,555
Total	9,084,781

MENOMINEE RANGE.

Beta	4,211
Brier Hill	14,981
Calumet	38,713
Cornell	49,302
Curry	416,928
Cyclops	286,093
Delphic	33,770
Emmett	66,655
Fairbank	8,500
Half and Half	7,524
Hamilton	96,072
Hersel	955
Hollister	4,098
Indiana	17,871
Iron River (Riverton)	904,587
Lee Peck	2,844
Ludington	1,001,518
Manganate	6,844
Mastodon	425,708
Metropolitan	107,027
Norway	1,291,353
Perry	3,138
Selden	2,092
South Mastodon	8,203
Stephenson	39,350
Sturgeon River	18,404
Vulcan	1,668,644
Walpole	19,089
Youngstown	151,425
Total	6,695,898

GOGEBIC RANGE.

Bessemer	20,889
Blue Jacket	1,799
Federal	36,443
First National	1,997
Iron Chief	12,199
Iron Chief No. 2	331
Sparta	4,862
Superior	121,627
Trimble	25,931
Tyler's Forks	10,683
Valley	1,878
Total	238,859

MESABI RANGE.

Minnewas	15,998

could be made by laying in a stock of ferro at present low prices, but few concerns were ready to make

furelcss. There is little call for cast scrap, which heretofore has been fairly active, but some few inquiries are

Cast scrap, light, net ton	10.00
Old iron axles, net ton	14.00
Old steel axles, net ton	12.50
Steel turnings, net ton	6.00

Miscellaneous steel rail, under 4 ft., net ton	9.00
Cast iron borings, free, net ton	4.00
Wrought pipe, net ton	8.00
Sheet iron, net tons	4.00

BUFFALO.

Sentiment Against Further Reductions in Prices.

Office of THE IRON TRADE REVIEW, 932 Ellicott Square, Feb. 4.

Pig Iron.—There has been little change in the market situation here during the past week. Prices, however, seem to have hardened and there is a stronger sentiment expressed against any further reductions. The inquiries received are for lots of 100 to 1,000 tons, on requirement orders and for delivery through the next three months. They are of much the same character as those that have been coming in for several weeks past and many of them are taken to be but feelers of market conditions. Buying is light and at present so largely nominal that it cannot be said to show any marked tendency either towards an increase or the opposite. One interest reports its January sales as having been slightly in excess of those of December, its inquiries showing a decrease during the past week, however. For immediate and first quarter delivery we quote the following:

No. 1X Foundry	$18.50 to 19.00
No. 2X Foundry	18.00 to 18.50
No. 2 Plain	17.50 to 18.00
No. 3 Foundry	17.25 to 17.75
Malleable Bessemer	18.00 to 18.50
Gray Forge	17.00 to 17.50
Charcoal	23.00 to 24.00

Finished Material.—The market is quiet and inquiries have fallen off a bit from last week. Sheets, plates and structural steel show some activity. The sale of Pittsburg bar iron in this territory is said to have paralyzed the local trade in steel bars. In keeping with the sentiment of the New York meeting last week, a dispositon to maintain prices is expressed in all quarters.

BIRMINGHAM.

Some Increase in Production — Pipe Plants Are Busy.

Two blast iron furnaces will resume operation during the first two weeks in February. The Bessemer rolling mills of the Tennessee Coal, Iron & Railroad Co. are again in operation after an idleness of several weeks. The steel plant at Ensley (Tennessee company) is still doing well and in the rail mill records in output are being broken.

The Campbell Mfg. Co. has been organized at Gadsden, Ala., capital $50,000, to manufacture plumbing supplies and soil pipe, including fittings. The company will erect a plant at once. The various soil pipe plants in the Birmingham territory report trade picking up a little and prospects bright. The southern cast iron pipe plants are running on almost full time will full forces employed. Quite a number of orders for pipe are on hand and others in prospect; in fact, conditions in this line are excellent.

BRITISH IRON MARKET.

Lower Prices and Keener Competition —Stocks Increasing.

Office of THE IRON TRADE REVIEW, Prince's Chambers, Corporation St., Birmingham, Eng., Jan. 25.

The full effect of the slump has been manifest this week in lower prices and keener competition. Practically all sorts of pig iron are a shilling cheaper, with the exception of the best foundry and cold blast brands. Stocks at Cleveland are beginning to accumulate, and though the progress is very slow, it seems now to mark a decided turn of the tide. Yesterday's quotation at Cleveland was 47s 10d ($11.70) for No. 3, with 47s 9d ($11.68) for three months. Northampton iron has been sold this week at 48s ($11.74). Reductions generally are proportionate. Enormous pressure is being exercised to force down prices, and orders given out are for very small lots. On the east coast demand is very slow, with 58s 6d ($14.32) for mixed numbers. There has been an increase in the Cleveland store of 8,500 tons since the beginning of the month. Although raw material is rather cheaper, there are great complaints that production is unprofitable, and more furnaces will be blown out.

METAL MARKET

CHICAGO.

Feb. 4.

A stronger tone exists in the metal market, though not sufficient to bring about general advances in prices. Sales are light and calculated to fill only immediate requirements. The market conditions, however, seem less substantial in metals in so far as they are out of line with consumption and supply.

Lake copper, 15c; casting, 14½c; pig tin, 30½c to 31c; spelter, 4.60c to 4.70c; pig lead, desilverized, 4.00c to 4.10c in 50-ton lots; corroding, 4.60c to 4.75c in 50-ton lots; car lots, 2½c per 100 pounds higher; sheet zinc, 7c list, f. o. b. LaSalle, in car lots of 600-pound casks; Cookson's antimony, 12½c to 13c; other grades, 12c to 12½c.

The general advance in prices of all metals except zinc reflects the conditions in the old metals market. Greater incentive to trading has existed and we quote to jobbers as follows:

Copper wire, 11¾c; heavy copper, 11¾c; light copper, 11c; heavy red brass, 11c; heavy yellow brass, 9½c; light brass, 6c; No. 1 red brass borings, 9½c; No. 1 yellow brass borings, 7¼c; brass clippings, 9½c; tea lead, 2⅞c; lead scrap, 3⅛c; zinc, 3⅜c; tin pipe, 22c; tin foil, 18c; pewter, 15c; electrotype plates, free from wood, 3¾c; electrotype dross, 2½c; stereotype plate, 4c; stereotype dross, 2⅞c; prime slab zinc dross, $60 per ton.

ST. LOUIS.

Feb. 3.

Lead and Zinc.—Prices for zinc ore reached $42 a ton in the Joplin district last week, an advance of $1 a ton over the previous week. The assay price of zinc was from $37 to $40 a ton for 60 per cent ore, and the demand was strong even at this price. The average price of lead ore in bins was $50, and in cars $50.50 per ton. This is the same price that prevailed the previous week. A strong decrease marked the shipments in zinc, amounting to 802 tons less the previous week. Lead fell off 188 tons.

For five weeks compared with the same season of 1907 the shipments show zinc decreased 10,409 tons, and of lead, 1,508 tons.

LET FURNACE CONTRACT.

The contract for the erection of a new blast furnace by the Brier Hill Iron & Coal Co., Youngstown, O., has been let to the Wm. B. Pollock Co., of Youngstown. The old stack is still in operation, but will be blown out and torn down immediately after March 1, and construction work on the new stack begun.

The February meeting of the Pittsburg Foundrymen's Association in the auditorium of the Engineers' Society of Western Pennsylvania Monday evening, Feb. 3, was devoted to a paper on "The Heat Treatment of Steel Castings" by H. M. Carr, of New York. A general discussion on the subject of annealing followed the paper. The membership of the Pittsburg Association has passed the 100 mark.

The new plant of the Allegheny Valley Malleable Iron Co., at New Kensington, Pa., near Pittsburg, is planning to go into operation within the next few weeks. This plant has a melting capacity of 100 tons per day, and a floor capacity to handle 60 to 80 tons, which will be the estimated output.

PIG IRON OUTPUT STEADILY DECLINES.

With the pig iron market remaining in a state of suspended activity, curtailment of production, especially by merchant interests, steadily continues. The output of coke and anthracite pig iron in the United States in January, according to the returns made to THE IRON TRADE REVIEW, was 1,043,374 gross tons, corresponding to 1,234,733 gross tons in December, a loss of 191,359 gross tons. The average daily capacity throughout January was 33,657 gross tons, compared with 39,830 gross tons in December, 60,685 gross tons in November, and 76,119 gross tons in October.

Of the January total, merchant furnaces contributed 390,533 gross tons and steel making companies 634,191 gross tons. The decline in the make of the merchant interests is marked, amounting to 145,616 gross tons in January over December, when the marketable output was 536,149 gross tons. The loss to the non-merchant furnaces in January was 48,125 gross tons, their combined output in December being 682,316 gross tons.

The number of active stacks in blast Jan. 31 was 139, comparing with 154 in blast on Dec. 31, a loss of 15, and with 226 stacks in blast Nov. 30, a loss of 87 stacks. Against the active capacity Oct. 31, or 314 stacks, the equipment in blast at the end of January reflects a striking indication of the extent of the curtailment policy, showing a net loss of 175 stacks in three months' time.

The short month of February promises to show a minimum production, unless the situation materially improves, as that period begins with an average active daily capacity of 35,248, against 31,814 gross tons Jan. 1.

The pig iron production of the country by months in 1907 in gross tons is as follows:

	1907.	1908.
January	2,194,801	1,043,374
February	2,047,036	.....
March	2,216,709	.....
April	2,226,708	.....
May	2,291,030	.....
June	2,237,420	.....
July	2,253,243	.....
August	2,243,656	.....
September	2,174,148	.....
October	2,359,690	.....
November	1,820,558	.....
December	1,234,733	.....

JANUARY FURNACE REPORT.

STATE—	NO. OF STACKS.	NO. IN BLAST ON LAST DAY OF MONTH. JAN.	NO. IN BLAST ON LAST DAY OF MONTH. DEC.	PERCENTAGE OF TOTAL POSSIBLE OUTPUT MADE.	AV. DAILY CAPACITY IN BLAST LAST DAY OF MONTH.	ACTUAL TONNAGE MADE. MERCHANT.	ACTUAL TONNAGE MADE. NON-MERCHANT.	TOTALS. JAN.	TOTALS. DEC.
Pennsylvania	157	61	71	43.2	16,385	116,864	399,870	516,734	553,087
Ohio	61	20	16	24.3	5,762	91,771	38,542	130,313	182,437
Alabama	46	14	18	34.1	3,473	59,666	26,370	86,036	97,952
Virginia	22	5	7	26.3	513	18,451	———	18,451	28,635
New York	24	8	9	32.4	2,048	43,329	30,420	73,749	84,768
New Jersey	10	4	5	48.7	604	22,635	———	22,635	22,555
Illinois	24	11	11	42.8	3,847	8,000	98,034	106,034	134,562
Tennessee	18	8	8						
West Virginia	4	0	0	24.6	563	17,244	———	17,244	33,849
Kentucky	7	0	1						
Maryland	4	1	1						
Wisconsin	6	2	1						
Colorado	6	3	3	41.2	1,969	8,300	40,697	48,997	69,156
Indiana	1	1	1						
Georgia	2	0	0						
Texas	2	0	0						
Minnesota	1	0	1	21.8	84	4,273	258	4,531	11,464
Michigan	2	1	1						
Missouri	1	0	0						
Spiegel—All states								13,616	6,612
Ferro—All states								5,034	9,656
Totals	398	139	154	——	35,248	390,533	634,191	1,043,374	1,234,733

BLAST FURNACE NOTES.

Standish furnace of the Northern Iron Co., Port Henry, N. Y., went out of blast for relining on Jan. 2.

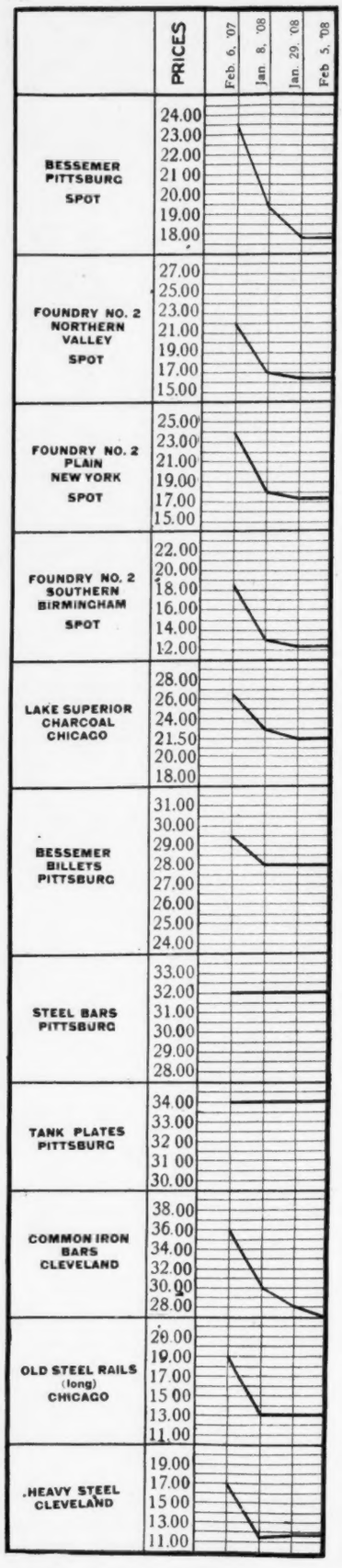
The United Iron & Steel Co., Pittsburg, is relining both its Cherry Valley and Fannie furnaces.

The Empire Steel & Iron Co., Catasauqua, Pa., blew out three furnaces in January. Catasauqua No. 3 went out on Jan. 29, Oxford furnace on Jan. 27, and Macungie on Jan. 7.

Emporium furnace at the Emporium Iron Works went out of blast on Jan. 18. Rockhill furnace was blown out on Jan. 12.

No. 4 furnace of the Shenango furnace Co. at Sharpsville, Pa., went out of blast on Jan. 3.

PRICE CHART.



LABOR BOYCOTT

Held Illegal by the United States Supreme Court.

For the third time within a month the supreme court of the United States has returned an important decision unfavorable to labor organizations. In a decision read Feb. 3 by Chief Justice Fuller and without a dissenting opinion, the court held that a boycott undertaken by the Hatters' Union against Loewe & Co., hatters, Danbury, Conn., is in restraint of interstate trade and therefore illegal under the seventh section of the Sherman anti-trust act.

Chief Justice Fuller said, in part:

In our opinion the combination described in the declaration is a combination "in restraint of trade or commerce among the several states" in the sense in which those words are used in the act, and the action can be maintained accordingly, and that conclusion rests on many judgments of this court, to the effect that the act prohibits any combination whatever to secure action which essentially obstructs the free flow of commerce between the states, or districts, in that regard, the liberty of a trader to engage in business.

The combination charged falls within the class of restraints of trade aimed at compelling third parties and strangers involuntarily not to engage in the course of trade except on conditions that the combination imposes; and there is no doubt that, to quote from the well known work of Chief Justice Erle on trade unions, "at common law every person has individually, and the public has also collectively, a right to require that the course of trade should be kept free from unreasonable obstruction."

MIDVALE STEEL CO. MAKES FIRST STATEMENT.

The first public statement of its earnings made by the Midvale Steel Co., Philadelphia, has just been completed and published. The results for the fiscal year ending Oct. 31, 1907, follow:

Profits for year after deducting all charges	$ 914,929
Less dividends and adjustment value of bar steel	373,372
Balance, surplus, for year	$ 541,557
Surplus as of Oct. 31, 1906	10,700,385
Total surplus Oct. 31, 1907	$11,241,942

The net earnings for ten years ending Oct. 31, 1898 to 1907, both inclusive, follow:

Year.	Net profits.
1897-98	$ 526,198
1898-99	1,291,922
1899-00	1,599,339
1900-01	1,282,151
1901-02	1,074,523
1902-03	748,488
1903-04	918,543
1904-05	1,632,339
1905-06	962,107
1906-07	914,929
Total net profits	$10,950,599

The company's balance sheet of Oct. 31, 1907, shows assets of $13,990,543 and liabilities of $2,738,600, leaving a surplus of $11,241,942.

At the annual meeting of the company, held on Jan. 13 last, the following-named directors were elected: Charles I. Harrah, James F. Sullivan, Charles B. Dunn, Alex. E. Petre and Howard Sellers.

DEATH OF ARTHUR B. STEVENSON.

Arthur B. Stevenson, Chicago manager for DeCamp Bros. & Yule Iron, Coal & Coke Co., St. Louis, died at his home, 294 E. Sixty-sixth street, Chicago, Thursday, Jan. 30, from an attack of typhoid fever. The burial was Saturday, in Mount Hope cemetery, in that city. Although only 32 years old at the time of his death, the deceased was widely and well known in the pig iron and coke trade. For 10 years he was associated as salesman with the St. Louis firm of C. A. Stevenson Pig Iron & Coke Co., seven years in the St. Louis territory and three as manager of the Chicago office of that firm. Four years ago, when DeCamp Bros. & Yule opened an office in Chicago, Mr. Stevenson was tendered and accepted the management of it, a position which he filled in a capable and loyal manner. He was frequently afflicted with illness, but possessing a buoyant and hopeful disposition, with the rare combination of a love of his work, a complete knowledge of his business, keenness as a salesman, and an ever-present desire to indefatigably serve his employers, he was enabled to build an uncertain venture into a marked success. His popularity with his associates and competitors was best attested by the presence of six of them as pall-bearers at the funeral. Mr. Stevenson is survived by his wife, mother, sister and three brothers.

ARTHUR B. STEVENSON.

PERSONALS.

C. R. Chandler, salesman for the Chandler Pump Co., Cedar Rapids, Ia., has resigned to take the position of manager for the American Steam Radiator Co., Cedar Rapids.

President J. R. Blakeslee, of the Ajax Mfg. Co., Cleveland, is traveling through Europe on a combination business and pleasure trip and expects to be gone until about the middle of May.

William V. Kelly, president of the American Steel Foundries, has been elected treasurer of the committee that proposes to raise $100,000 for charity among the business men of Chicago.

H. H. Stambaugh, secretary of the Brier Hill Iron & Coal Co., Youngstown, sailed from New York on the steamer Arabic on Thursday of this week for a three months' pleasure trip through Europe.

Calvin S. Wells, Pittsburg, president of the Pittsburg Forge & Iron Co., has relinquished control of the *Philadelphia Press* to his son Benjamin G. Wells, who has been secretary and treasurer of the latter company. For a number of years, Calvin S. Wells was president of the New York Press Co.

Parker Dodge has been added to the sales force of the Youngstown Car Mfg. Co., Youngstown, O., builder of industrial cars. Mr. Dodge is a recent graduate of the Massachusetts Institute of Technology. His field will be the Pittsburg district and temporary offices are at 220 Lewis building, Pittsburg.

Robert Wuest, commissioner of the National Metal Trades Association, is due to arrive in New York this week. Mr. Wuest has spent several months abroad. It is expected that he will stay in the east making preparations for the coming convention of the association, which will be held in New York in March.

Edward H. Parker has been named superintendent of the New Haven, Conn., plant of the American Steel & Wire Co., recently bought from the National Wire Corporation. He was formerly with the American Steel & Wire Co. at Cleveland and several years ago became assistant to Herbert Smith, manager of the National Wire Corporation.

THE IRON TRADE REVIEW

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THE NEW YORK CONFERENCE.

At the conference of the country's representative iron and steel producers, held in New York last week for the consideration of general trade conditions and the exchange of views as to what the future holds in store, emphasis was laid upon two factors as being chiefly responsible for the recent sharp curtailment in demand, resulting in the slowing down of productive activities. These factors, intimately related and to some degree overlapping, may be stated as follows:

1. The summary removal from the general manufacturing industry—the consuming field—of that degree of confidence in the outlook necessary to stimulate production beyond immediate requirements; and,

2. The uncertainty—even with an increase in business at hand and the prospect of its continued improvement—in connection with the prices of semi-finished and raw materials, the immediate result of which has been the reduction of purchasing to the minimum and the practical prohibition of any long time contracts.

That these two elements in the industrial situation have been present for several months and that they have been most active agencies in slowing down the wheels, admit of no denial. Apparently, however, the first is rapidly being cleared away. Financial difficulties, the underlying source of trouble, have been largely removed, and in other directions affairs have been making toward a restoration of confidence to such a degree that there is no reason to doubt a continuance of improvement. This work of restoration has been largely fostered by the co-operation in the iron and steel industry, in much the same manner as the standing together of worthy financial institutions has tided them over a threatening period.

"When you have confidence," said Judge Gary at the New York dinner, "you have business. Now, gentlemen, it's a matter of confidence." And developments since that meeting have proven that the decision to continue the policy of co-operation has done much to further improvement in the situation.

Probably of greater importance, however, was the general expression of sentiment on the part of the assembled producers that no lowering in prices of finished products and pig iron was warranted, this being understood to mean that no reductions were to be expected. The present price level is not unduly high; in fact, in a number of lines it is perilously near production cost and in some instances, notably pig iron in the eastern district, is actually below that figure. A glance at the charted quotations for the last decade will show that prices are now only about the average; if anything, somewhat below it.

But, whether the price level is low or high, the factor of utmost importance is that of permanency. Violent fluctuations are not so frequent nor wide-reaching as before the formation of the Steel Corporation, with its steadying influence, but are still sufficiently common and extensive to afford a field for speculation and, in times of impaired activity, to render the consumer a hand-to-mouth customer. It has been demonstrated time and again that even radical reductions with a view to stimulating purchases of iron and steel fail of their purpose and only lead to demoralization.

"The belief was expressed," said Judge Gary in reporting the results of the conference, "that stability of prices, if and when reasonable, is desirable; and that violent fluctuations are to be deplored."

For a plainly-worded, dollars and cents evidence of the truth of this belief, he had only to refer back a fortnight, when two great associations of castings manufacturers, representing an annual consuming capacity of over 1,000,000 tons of pig iron, made formal request that "as soon as possible a reasonable minimum price be established and maintained" in order that the products of their concerns might "also reach a fair minimum price" and that they might be enabled to close contracts held up because of this uncertainty. Even more remarkable was the intimation that, even if a price above the current level should be decided upon, it would be entirely agreeable provided only it was maintained.

The removal of any element of doubt as to the future naturally exerts a telling force in strengthening the situation. Measured by this standard alone, and leaving out of consideration the benefits accruing from an increased acquaintance and more cordial spirit fostered among those in attendance, the New York conference of last week must be credited with two all-important accomplishments. It gave to the waiting public the assurance that stability in prices of finished materials could be relied upon, and made certain the continuance of the policy of co-operation, two mighty powers for the restoration of normal conditions.

THE STEEL CORPORATION IN 1907.

In our last issue we presented the financial report of the United States Steel Corporation for the fourth quarter of 1907, which had just been made public. From the four quarterly reports it is possible to compile a statement for the entire year, such as is

given in the annual report, which usually comes out in March. Such a statement follows, there being appended the figures for 1906, taken from the last annual report:

	1906.	1907.
Net earnings	$156,624,273	$160,984,477
Sinking funds, subsidiary bonds, depreciation, etc.	30,657,335	27,664,729
Balance	$125,966,938	$133,319,748
Interest and sinking funds, corporation bonds	27,747,850	27,997,850
Balance	$ 98,219,088	$105,321,898
Charged off, sundry adjustments	90,501	483,529
Balance	$ 98,128,587	$104,838,369
Preferred dividends, 7 per cent	25,219,677	25,219,677
Balance	$ 72,908,910	$ 79,618,692
Common dividends, 2 per cent	10,166,050	10,166,050
Balance, surplus net income	$ 62,742,860	$ 69,452,642
Appropriated for improvements, etc.	50,000,000	54,000,000
Passed to surplus.	$ 12,742,860	$ 15,452,642

It will be observed that there is very little difference in the final results for the two years. The manner in which the results were reached, however, was quite different. The earnings in 1907 ran ahead of those in 1906, month by month, until for November and December they declined sharply. The earnings in October, 1907, were the highest for a month in the corporation's whole history. The net results for the year showed a gain of a trifle over $4,000,000, just about equal to the increase in the appropriations for capital purposes made from surplus net income, the amount actually passed to surplus showing an increase of about $3,000,000, this being about equal to the decrease in the depreciation and such charges which are deducted before the corporation bonds are taken care of.

The first deduction in the above table, designated as for sinking funds on subsidiary bonds, depreciation, etc., includes the sinking funds on about $110,000,000 of various bonds of subsidiary company bonds which are outstanding. The interest on these bonds, amounting in 1906 to $6,391,043, is deducted before the "net earnings" are reached, so that the actual earnings of the corporation are larger by this amount than the sum usually reported. This item also includes regular depreciation charges and "extraordinary" and "special" replacement and improvement funds. It also includes certain extinguishment funds, which the corporation has stated are calculated upon the basis of providing for the exhaustion of the original mineral properties, beyond that portion of their capitalization which is represented by the corporation's bonds, which are all to be retired some 45 to 55 years hence.

The second deduction covers $15,197,850 interest, at 5 per cent, on the $303,957,000 of first mortgage bonds, together with the sinking fund of $3,040,000 against these bonds. Next it covers the interest at 5 per cent on the bonds created for retiring preferred stock, and for other purposes, as well as the sinking fund of $1,010,000 against these second mortgage bonds. The amount in 1906 and to Nov. 1, 1907, was $170,000,000. During November and December last, interest was paid on $200,000,000 of these bonds, the extra $30,000,000 being the bonds issued in exchange for Tennessee company stock. It will be observed that the item is $250,000 larger for 1907 than 1906, this representing two months interest on the $30,000,000. A portion of this bond interest is on bonds in the sinking funds, as these bonds are of the kind which bear interest until the maturity of the entire issue, being applicable for sinking fund purposes.

The preferred dividends are upon $360,281,100 of preferred stock, the common dividends being upon $503,302,500 of common stock. With the increase in the second mortgage bonds on account of the Tennessee acquisition, the capitalization of the United States Steel Corporation stands as follows:

First mortgage bonds	$ 303,957,000
Second mortgage bonds	200,000,000
Preferred stock	360,281,100
Common stock	508,302,500
Total	$1,372,540,600

In addition, there are about $116,000,000 face value of subsidiary company bonds, according to the last annual report. Of the first and second mortgage Steel Corporation bonds, there were on Dec. 31, 1906, $18,956,500 held in their sinking funds, and of the subsidiary company bonds there were $5,811,000 in their sinking funds. The amount has, of course, increased during the year. As these bonds in sinking funds continue to bear interest, they are properly included as a part of the capitalization.

The deductions from surplus net earnings of $50,000,000 in 1906 and $54,000,000 in 1907 are for discharge of various capital obligations, for additional property, and for new construction. To Sept. 30, 1907, there had been appropriated for the Gary plant $49,000,000, chiefly in 1906 and the first three quarters of 1907. Of the amounts appropriated for new construction at Gary and elsewhere, there remains large unexpended balances. Evidently it will be entirely unnecessary, in any event, to make very large appropriations in future to complete the new construction program which is now under way. Indeed, it is not known, and need not be surmised, that a single dollar will have to be thus appropriated during the current year to enable the new construction program to be continued, so that the corporation's earnings in 1908 could shrink from those in 1907 by $54,000,000 thus appropriated in that year, plus nearly $16,000,000 passed to surplus, or by about $70,000,000, bringing the 1908 net earnings down as low as $90,000,000, without materially affecting the corporation's financial position.

Improvements to Proceed.—The Youngstown Sheet & Tube Co., Youngstown, O., has decided to go ahead with extensive improvements to its plant, which were contemplated several months ago. The improvements, which will effect a material enlargement of works capacity, were temporarily suspended under the force of the recent financial stringency in general commercial affairs.

The Republic Iron & Steel Co. announces the following changes in its sales force: Ralph P. Zint, assistant manager of sales of the Pittsburg office, becomes manager of sales at the Chicago office, succeeding J. H. Hubbert, who becomes manager of sales of the St. Louis office. Frank L. Phlem, of the St. Louis office, goes to New York as manager of sales in that district. George F. Alderdice, of the Crucible Steel Co. of America, succeeds Mr. Zint in the Pittsburg office as assistant general manager of sales.

MEETING OF MANUFACTURERS

Leaders of the Iron Trade Declare Against Reduction of Prices — Speeches by J. Pierpont Morgan, Judge Gary and Others — A Notable Banquet

Declaring their confidence in the gradual return of normal business conditions and volunteering their co-operation toward the renewal of that degree of confidence necessary for unhampered industrial activity, 70 leading spirits in the iron and steel trade of the country gathered at New York on Thursday and Friday of last week and took action of widest importance to the commercial and manufacturing interests of America. To the public, the matter of chief concern in the results of the conference was the announcement that without exception, the expressed opinion was against any change in prevailing prices, as it was felt that their maintenance on the present level would, in the words of Judge Gary, "result in benefit to the manufacturers, to their customers, to the employes and to business interests generally;" for the reason "that stability of prices, if, and when reasonable, is desirable and that violent fluctuations, resulting in abnormally high prices when the demand exceeds the supply and unreasonably low prices when the reverse is true, are to be deplored."

At the first conference and banquet, the call for which was issued by Judge E. H. Gary, chairman of the United States Steel Corporation, and which was held in New York early in November, it was announced that another similar meeting would be held later. The general committee selected at the original assemblage had meanwhile had time to investigate the situation and to delegate to the various sub-committees a large amount of special work calling for immediate attention. When it was deemed that committee work had proceeded sufficiently far without the indorsement of its decisions by the trade at large, the call was issued for a second meeting of the general committee. This was held on the afternoon of Thursday for the general exchange of ideas on the trade outlook and other pertinent matters. This general meeting was preceded by a number of special gatherings confined to certain branches of the industry, some of these being held in Pittsburg on the day previous and others at various places about New York.

On the invitation of the general advisory committee, about 70 were present at the dinner given Thursday evening in one of the banquet rooms at the Waldorf-Astoria. Judge Gary presided, and addresses or briefer remarks were made by practically everyone in attendance. Particular interest centered in the statements of J. Pierpont Morgan, Judge Gary, W. E. Corey, E. C. Felton, Willis King, E. A. S. Clarke, Chas. M. Schwab, J. G. Butler Jr., W. A. Rogers, John A. Topping, Powell Stackhouse, Samuel Mather and O. P. Letchworth.

Gary Reviews Work Done.

In his opening remarks, Judge Gary thanked the banqueters for their presence and referred in exceedingly congratulatory and complimentary terms to the work of the past two months. He spoke of the large number of meetings held during that time and referred to the gratifying extent to which the suggestions of the first general gathering had been carried out in the interests of co-operation and conciliation in the industry.

"Counted by the measure of its results and interests represented," he declared, "this is the greatest meeting of business men ever held in this country."

Reviewing the routine work since the original gathering, he stated that, as was well known, the general committee had enlarged its membership and apportioned work to a number of sub-committees, all of which had since labored indefatigably with a view of harmonizing conflicting ideas in the industry. He would not state, he added, that no snags or difficulties had been encountered, but in the main admirable success had been attained, to such an extent, in fact, that, if the future could in any way be forecasted by the evidence now in hand, the continuance of the gradual return to normal business conditions was certain. In his judgment, however, the industrial attention of the entire country was centered upon this meeting and its decisions, thereby placing those in attendance in a position of great responsibility.

If the spring passed without a serious business reaction, Judge Gary continued, there is no question whatever about the summer and fall. But the industrial situation has sustained a severe check, and it is not possible to throw this off and resume activities at normal speed immediately. Everyone present, he declared, was proud of the record for broad-minded business methods prevailing in the iron and steel trade and for the sane business principles of those directing its destinies, all of which had naturally increased the importance of its bearing upon other interests of the country. When financial difficulties threaten, bank presidents and other financial men are accustomed to stand together for the restoration of normal conditions, and their action meets with the country's approval. There is equal justification for united action on the part of the leaders in iron and steel, and the fact that there is practical co-operation in the industry marks a distinct advance over the disorganized condition of the industry in previous periods of depression.

Confidence the Keynote.

The one great issue of the present, Judge Gary declared, is confidence. Just as soon as it becomes generally known that complete trust can be placed in any condition, then that condition is firmly established. The element of uncertainty and doubt is the prime factor in causing disorganization. Remove that factor and there is no disorganization, only complete and wholesale confidence.

"When you have confidence," he added, "you have business. Now, gentlemen, it's a question of confidence.

"I am so firmly convinced of the honor and integrity in business affairs of every man here, of his broad views and wide conception of his duty, that I would not hesitate for a moment to take the word of any of you on any subject; I would just as soon have it as your bond."

Judge Gary further stated that, so far as he knew, there was nothing at all antagonistic to the iron and steel industries of the country and their methods of operation on the part of anyone in official position, federal or state, executive, legislative or judicial. This friendly feeling was naturally a matter for self-congratulation on the part of the industry, which all must see was maintained. Not only must anything conflicting with the letter or spirit of the law be avoided, but anything giving the appearance of wrongdoing must be guarded against just as zealously.

Continuing, Judge Gary referred to the fact that this country does about half the iron and steel business of the world and that it has become generally understood that it is a dependable barometer to the business of the nation. This, he argued, only served to increase the responsibility of all those present to maintain the industry on as high a plane as possible and rendered it more imperative that each

should do his duty at this time and assist in making widespread and universal the idea that those at its head recognized this responsibility and were prepared to meet them.

Question of Prices.

In concluding his remarks, Judge Gary made the report that at a meeting of the general committee held during the day it had been ascertained that in the minds of those present there existed no apparent reason to warrant any reduction in prices on products of the various establishments represented. This sentiment was endorsed by a rising vote of unanimous character on the part of those at the dinner.

Views of J. Pierpont Morgan.

Following Judge Gary, brief remarks were made by J. Pierpont Morgan. He referred to the fact that he had always been taught in a business way to regard the iron and steel trade as an accurate barometer to general business conditions, and likewise believed that no other power had or would ever exert as important a bearing on the general prosperity of America. His confidence and faith in the extent to which it is always an industrial factor, he added, were important considerations in inducing him to co-operate in the work of uniting these interests more firmly for the elimination of possible dangers arising from lack of organization, the establishment of the trade of the country upon a firm foundation, the wiping out of violent fluctuations with their ruinous results and the insuring of a stable, equitable level upon which both producer and consumer could depend. Referring to the entire steel business of America, he said:

"There is no business in all the world of anything like equal volume in as few hands, but I believe those at the head will prove equal to this emergency."

It was close to 1 o'clock before the meeting broke up and before this time practically everyone present had spoken briefly. There was generally manifested a tone of optimism, in no wise extravagant but none the less positive.

The Official Statement.

So keen was the interest manifested Friday in the results of the gatherings of the previous day that a brief statement was given out by Judge Gary, referring chiefly to the sentiment on prices. This was followed late in the afternoon by an extended statement, the text of which follows:

A conference of representative pig iron, iron and steel manufacturers was held on Thursday of this week for the purpose of carefully considering the general condition of the trade and for exchange of views as to the future. Much information was received and many questions relating to local conditions and particular commodities were discussed.

At the close of the deliberations, which occupied the greater part of the day, every manufacturer present gave the opinion that no necessity or reason exists for the reduction of prices at the present time, and that this view should be stated at the large gathering which was expected for the evening.

Upon the invitation of the general advisory committee heretofore appointed there were present at the dinner served at the Waldorf-Astoria about 75 gentlemen representing the principal manufacturers of iron and steel in this country and including several leading purchasers of these commodities. Brief addresses were made by practically everyone present, and without exception the opinion was voiced that prevailing prices are fully justified and should not be changed.

While no agreements for the maintenance of prices were made or suggested, it was the expressed belief of all that such maintenance would result in benefit to the manufacturers, to their customers, to their employes and to business interests generally; that stability of prices, if and when reasonable, is desirable; that violent fluctuations, resulting in abnormally high prices when the demand exceeds the supply, and unreasonably low prices when the reverse is true, are to be deplored.

It was also remarked that the present disposition to assist one another by the friendly interchanges of views rather than a resort to unreasonable and destructive competition, which would ultimately result in the application of the law of the survival of the fittest, is in accordance with the present state of public sentiment. The meeting afforded a striking illustration of the fact that there can be active, sharp competition in business without necessitating an unfriendly and bitter warfare that in the end must be most injurious to the manufacturers, the purchasing public and to the hundreds of thousands of employes who are dependent upon the success of their employers for work at fair wages.

As to the future, opinions were, without exception, conservatively optimistic. Already there is a marked though slight improvement. It is not expected the volume of business will be large in the immediate future and manufacturers are prepared to meet the circumstances. That the wealth and wonderful resources and recuperative powers of the country will before long bring a restoration of business that will employ all the furnaces and mills to their full capacity is the expectation of the leaders in the iron and steel industry.

A feature of importance considered at the meeting of Thursday was the reference to a resolution received from a joint meeting of the Steel Founders' Society and the American Malleable Castings Association, held Jan. 17. Members of these associations are large purchasers of the commodities manufactured and sold by those who were at the banquet on Thursday evening. The resolution is as follows:

"Whereas, The iron and steel industry of this country is an important factor in establishing our business conditions, and the unsettled price of raw materials is a disturbing element preventing the return of confidence and the employment of hundreds of thousands of operators; Be it

"Resolved, That we deem it as being for the greatest good of all our industries using pig iron as a basic material that as soon as possible a reasonable minimum price be established and maintained in order that the product of our many establishments may also reach a fair minimum price."

Similar expressions have been received by many other prominent purchasers of iron and steel.

Those at Waldorf Dinner.

Morris Bachman, president Sharon Steel Hoop Co., Sharon, Pa.
Edward Bailey, president Central Iron & Steel Co., Harrisburg, Pa.
George Bartol, manager Otis Steel Co., Cleveland.
C. W. Bray, president American Sheet & Tin Plate Co., Pittsburg, Pa.
E. J. Buffington, president Illinois Steel Co., Chicago.
J. G. Butler Jr., president Bessemer Ore Association, Youngstown, O.
J. A. Campbell, president Youngstown Sheet & Tube Co., Youngstown, O.
E. A. S. Clarke, president Lackawanna Steel Co., New York.
E. S. Cook, Warwick Iron & Steel Co., Pottstown, Pa.
Daniel Coolidge, president Lorain Steel Co., Philadelphia.
W. E. Corey, president United States Steel Corporation, New York.
George G. Crawford, president Tennessee Coal, Iron & Railroad Co., Birmingham, Ala.
H. G. Dalton, Pickands, Mather & Co., Cleveland.
Charles Deering, chairman International Harvester Co., Chicago.
W. B. Dickson, vice president United States Steel Corporation, New York.
A. C. Dinkey, president Carnegie Steel Co., Pittsburg.
R. H. Edmonds, editor *Manufacturers' Record*, Baltimore.
B. F. Fackenthal Jr., president Thomas Iron Co., Easton, Pa.
J. A. Farrell, president U. S. Steel Products Export Co., New York.
E. C. Felton, president Penn Steel Co., Philadelphia.
E. H. Gary, chairman United States Steel Corporation, New York.
James Gayley, first vice president United States Steel Corporation, New York.
E. M. Hager, president Universal Portland Cement Co., Chicago.
Charles Hart, president Inland Steel Co., Chicago.
J. A. Hatfield, president American Bridge Co. of New York, New York.
J. H. Hoyt, Cleveland.
C. R. Hubbard, president Wheeling Iron & Steel Co., Wheeling, W. Va.
A. F. Huston, president Lukens Iron & Steel Co., Coatesville, Pa.
O. N. Hutchinson, president Grand Crossing Tack Co., Grand Crossing, Ill.
Archibald Johnston, president Bethlehem Steel Co., So. Bethlehem, Pa.
Jonathan R. Jones, secretary Alan Wood Iron & Steel Co., Conshohocken, Pa.
I. A. Kelley, president Ashland Steel Co., Ashland, Ky.
Willis L. King, vice president Jones & Laughlin Co., Pittsburg.
Charles Kirchhoff, editor *Iron Age*, New York.
O. P. Letchworth, Pratt & Letchworth, Buffalo.
Hon. Franklin D. Locke, Buffalo.
James Lord, president American Iron & Steel Mfg. Co., Lebanon, Pa.
Thomas Lynch, president H. C. Frick Coke Co., Pittsburg.
Cyrus H. McCormick, president International Harvester Co., Chicago.
C. H. McCullough, vice president Lackawanna Steel Co., Buffalo.
G. G. McMurtry, chairman American Sheet & Tin Plate Co., New York.
Samuel Mather, Pickands, Mather & Co., Cleveland.
Benjamin Nicoll, 69 Wall street, New York.
W. P. Palmer, president American Steel & Wire Co., Cleveland.

Leonard Packitt, president Empire Steel & Iron Co., Catasauqua, Pa.
John A. Penton, managing editor THE IRON TRADE REVIEW, Cleveland.
George W. Perkins, 23 Wall street, New York.
Veryl Preston, president Eastern Steel Co., New York.
Charles A. Rathbone, Buhl Malleable Co., Detroit.
J. H. Reed, Pittsburg.
David Reeves, president Phoenix Iron Co., Philadelphia.
John Reis, assistant to the president United States Steel Corporation, New York.
Fred Roebling, treasurer Chas. G. Roebling Sons Co., Trenton, N. J.
W. A. Rogers, treasurer Buffalo & Susquehanna Steel Co., Buffalo, N. Y.
Wallace H. Rowe, president Pittsburg Steel Co., Pittsburg.
W. B. Schiller, president National Tube Co., Pittsburg.
Charles M. Schwab, chairman Bethlehem Steel Co., New York.
I. M. Scott, president La Belle Iron Works, Steubenville, O.
F. C. Smink, president Reading Iron Co., Reading, Pa.
Powell Stackhouse, president Cambria Steel Co., Philadelphia.
Alex Thompson, Inland Steel Co., Chicago.
John A. Topping, president Republic Iron & Steel Co., New York.
W. R. Walker, assistant to president United States Steel Corporation, New York.
W. L. Ward, Russell, Burdsall & Ward Bolt & Nut Co., Rochester, N. Y.
George W. Wickersham, 40 Wall street, New York.
Frank S. Witherbee, 2 Rector street, New York.
F. W. Wood, president Maryland Steel Co., Sparrows Point, Md.
W. P. Worth, Worth Bros., Coatesville, Pa.
Charles H. Zehnder, president Allegheny Ore & Iron Co., New York.
August Ziesing, president American Bridge Co., Pittsburg.

ARRANGEMENTS FOR A. F. A. CONVENTION.

Preliminary arrangements for the annual meeting of the American Foundrymen's Association were discussed at a meeting held in Toronto, Jan. 23. The meeting was called by L. L. Anthes, vice president of the organization, and the different societies interested in the convention were represented. The meeting will be held the second week in June, instead of the first as previously decided, to avoid the crowded condition of the hotels due to the large attendance at the circuit races set for that week.

The Process Building and Machinery Hall on the Industrial Exhibition Grounds have been set apart for the exhibits of the Foundry Supply Association and the auditorium has been selected for the proceedings of the A. F. A. The two exhibition buildings have a combined floor space of 121,000 square

The meeting was attended by L. L. Anthes, Toronto Foundry Co.; Dr. Richard Moldenke, secretary American Foundrymen's Association; H. M. Lane, secretary Foundry Supply Association; C. H. Wheaton, Dodge Mfg. Co., Toronto; S. M. Chapman, Ontario Wind & Engine Co., Toronto; E. G. E. Holker, Wilkinson Plough Co., Toronto; David Reid, Canadian Westinghouse Co., Hamilton, Ont.; W. R. Beers, Detroit Foundry Supply Co., Detroit; F. W. Moffat and J. K. Moffat, Moffat Stove Co., Weston, Can.; J. P. Murray, E. Flaysing and J. S. McKinnon, Canadian Manufacturers' Association.

CANADIAN PIG IRON PRODUCTION IN 1907.

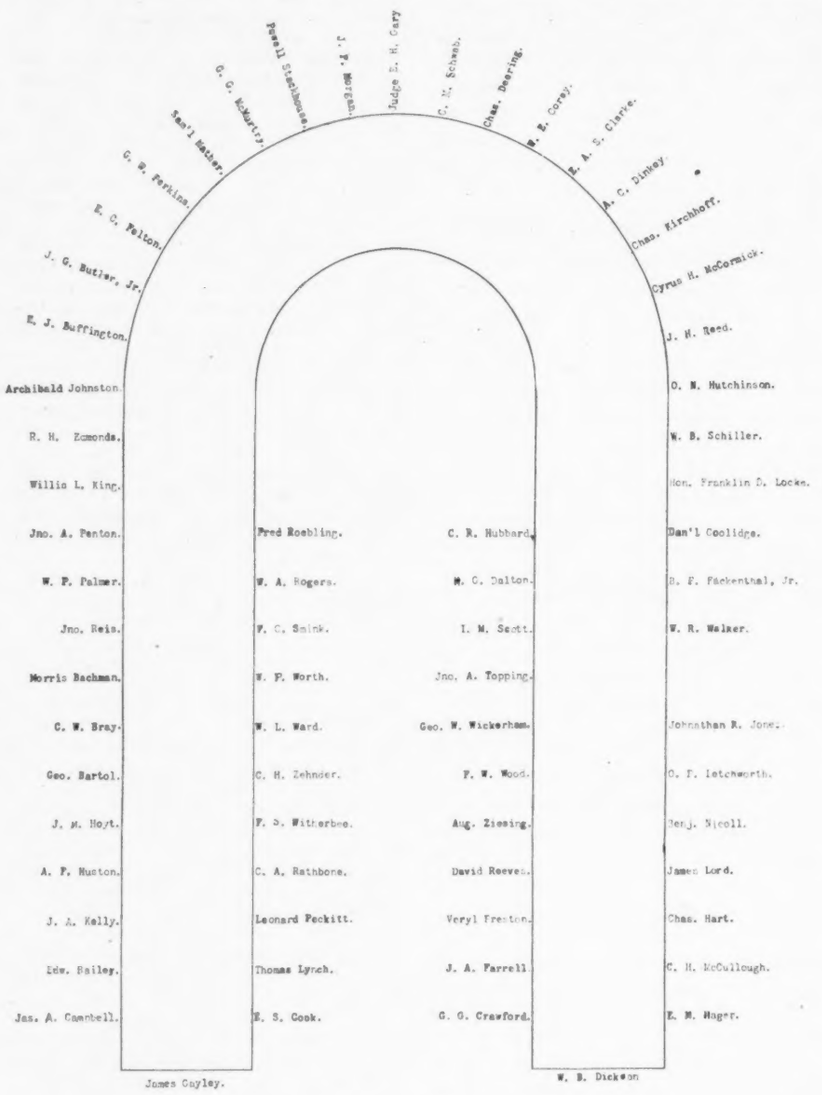
James M. Swank of the American Iron and Steel Association reports that the total production of all kinds of pig iron in Canada in 1907 amounted to 581,146 tons, against 541,957 tons in 1906, an increase of 39,189 tons, or over 7 per cent.

In the first half of 1907 the pig iron production of Canada amounted to 270,100 tons, and in the second half to 311,046 tons, an increase of 40,946 tons. Of the total production in 1907 572,025 tons were made with coke, 8,971 tons with charcoal, and 150 tons with electricity.

The production of basic pig iron in Canada in 1907 amounted to 341,257 tons, against 246,228 tons in 1906, and the production of Bessemer pig iron to 154,910 tons, against 165,609 tons in 1906. Basic pig iron was made in 1907 by four companies owning nine furnaces, and Bessemer pig iron by two companies owning three furnaces. The basic and Bessemer pig iron was all made with coke. Canada has not made spiegeleisen or ferro-manganese since 1899.

On Dec. 31, 1907, Canada had 16 completed furnaces, of which 14 were in blast and two were idle. Of the total 13 usually use coke for fuel and three use charcoal. In addition, three coke furnaces upon which work was suspended some time ago were partly erected on Dec. 31.

During the first half of 1907 the total number of furnaces in Canada actually in blast for the whole or a part of the period was 12, of which 10 used coke and two used charcoal. During the last half of the year the total number of active furnaces was 15, of which 13 used coke and two used charcoal.



ARRANGEMENT OF GUESTS AT NEW YORK BANQUET.

Sir Alfred Hickman.

EMINENT MEN OF THE IRON WORLD

VII. Sir Alfred Hickman.

By J. Horton.

The subject of our recent biography, Sir Hugh Bell, Bart., was in many ways a typical representative of the North of England. The subject of our present sketch, also a knight and a baronet, is a Black Countryman to the finger tips. Sir Alfred Hickman, Bart., is a native of Tipton, and therefore may be said to have inhaled his full share of Black Country sulphur and smoke. His whole life has been devoted to the development of the industry which he now adorns, and although 77 years of age, he is hale, robust and vigorous, still planning new schemes to keep his great establishment not merely abreast, but, if possible, ahead of his time. In mental outlook, it may be said that Sir Alfred will never grow old. His passion for the very latest things in mechanics is shown by the arrangements he is making to instal at the works of Alfred Hickman, Ltd., Spring Vale, Wolverhampton, electrical rolling mills, with reversing gear on the principles described at the May meeting of the Iron and Steel Institute by D. Selby-Bigge, of Newcastle-on-Tyne. When this paper was not two months old, Sir Alfred had already sketched out a plan for the installation of these mills at a cost, probably, somewhere near £70,000.

This rapid evolution of a new scheme very well exemplifies Sir Alfred's habit of swift decision, and his genius for sizing up whatever is submitted to his clear, ripe and experienced judgment. His views on the need of up-to-date methods were very well epitomized in the brief interview The Iron Trade Review representative had with Sir Alfred at his charming London residence in Kensington Palace Gardens, overlooking Hyde Park: "You have got to be moving the whole time or you'll be left behind. The world never stops."

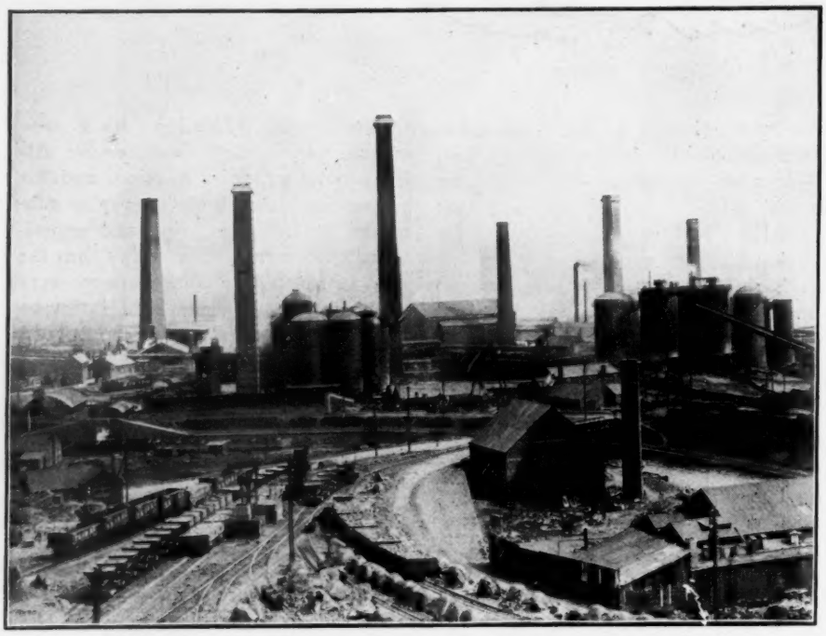
If Sir Alfred were 97 instead of 77, and heard of a good thing in iron trade mechanics, he might be depended upon to secure it.

[1]Other biographical sketches in this series: are as follows: 1. John Fritz, Feb. 28, 1907; 2. Joseph Wharton, April 4, 1907; 3. Frank J. Hearne, July 4, 1907; 4. Sir Hugh Bell, Aug. 8, 1907; 5. John J. Spearman, Sept. 5, 1907; 6. Jas. M. Swank, Jan. 2, 1908.

Wightwick, Wolverhampton, the Home of Sir Alfred Hickman.

His Title to Fame.

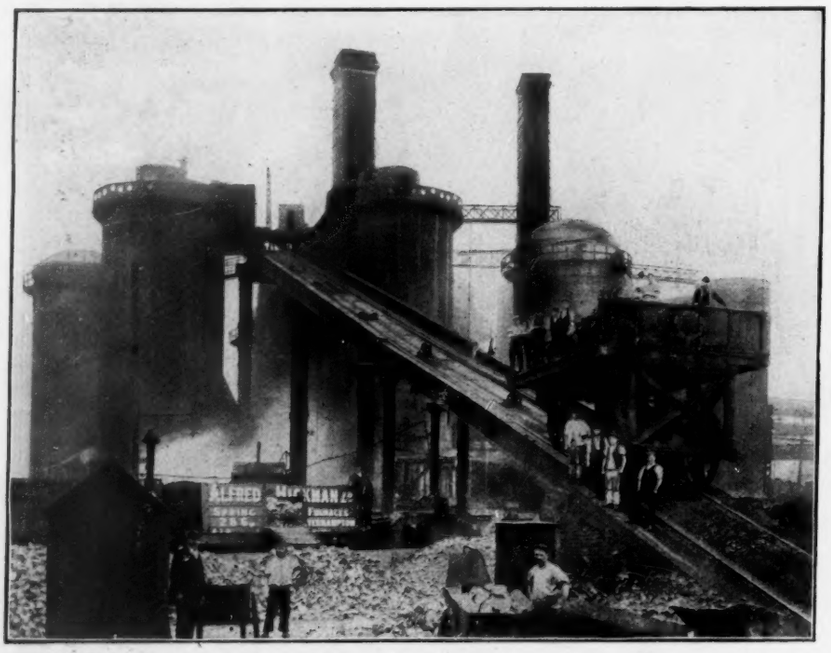
Of the growth of his great business some details will be given later, but in the estimation of his contemporaries his title to fame will not be



GENERAL VIEW OF BLAST FURNACE PLANT OF ALFRED HICKMAN, LTD.

his magnificent success as a great Black Country ironmaster, but his loyal, persistent and unwearying championship of the interests of his district in and out of parliament. Ten years ago, a well deserved tribute was paid in a discriminating sketch of his career:

"Sir Alfred Hickman is one of a group, unfortunately a small group, who represent in a prominent degree the business interests of the nation. It is one thing for an M. P. to be a man of business. It is quite a different thing for him to have energy and enterprise enough to become distinguished in parliament as the spokesman of the industrial and mercantile community, and the active guardian of their interests. Sir Alfred Hickman is the leading representative in parliament of the iron and coal industries of the Black Country. In addition to conducting his own business—a business with many ramifications—he has taken a great part in the endeavor to reduce the railway rates on merchandise, and to open up inland waterways. He is one of the leading figures on the Birmingham Iron Exchange. He is a familiar personality at the congresses of the Association of Chambers of Commerce, and the local chambers have a way of looking to him for guidance and information and of entrusting their interests to his care in the House of Commons, before parliamentary committees, at the chambers of commerce conferences, and in negotiations with railway companies. Altogether, Sir Alfred is quite a formidable character in the world of business."



VIEW OF STACKS ON CHARGING SIDE, PLANT OF ALFRED HICKMAN, LTD.

Sir Alfred is no longer in parliament, the turn of the political wheel at the last election having resulted in his defeat after an almost uninterrupted term of parliamentary service for a quarter of a century. But he can look back upon a remarkably fruitful period of good work, and it is well known that in respect of railway rates alone, certain Black Country firms have reduced their costs bill by thousands of pounds as the outcome of his prolonged contests and negotiations with railway companies. A remarkable compliment was offered in connection with a presentation made to him after his retirement from parliament. Lord Dartmouth, who presided, mentioned that at the annual dinner of the Wolverhampton Chamber of Commerce a generous tribute was paid to Sir Alfred by his life-long political opponent, Sir Henry Fowler. Sir Henry on that occasion testified that in the days when he was engaged in his duties as a minister of the crown, and not able to attend as closely as he could have wished to the wants of his constituency, the real member for Wolverhampton was Sir Alfred Hickman.

Business Career.

Sir Alfred's business career has been somewhat overshadowed by his public work, but it has been equally honorable and successful. King Edward VI's School in Birmingham has during its long history turned out a great succession of public and eminent men, and Sir Alfred was fortunate in being one of its scholars. At the age of 17, having had some commercial training under his father, who was the managing partner in the Moat colliery at Tipton, he began business

on his own account as an iron merchant. Early marriages are a little out of fashion now-a-days, but Sir Alfred at all events lost no time in adding domestic cares to his other responsibilities, for at 19 he married Miss Lucy Owen, the daughter of William Smith, of Portsea, Hants. Two years later, he joined his father and brother in their business as ironmasters and colliery proprietors. This was 56 years ago, and today he owns four-fifths of the shares, and is the chairman of the firm of Alfred Hickman, Ltd., which carries on ironstone mines in Oxfordshire, and collieries, steel works and blast furnaces in Staffordshire. His collieries in Warwickshire he still retains in his own hands.

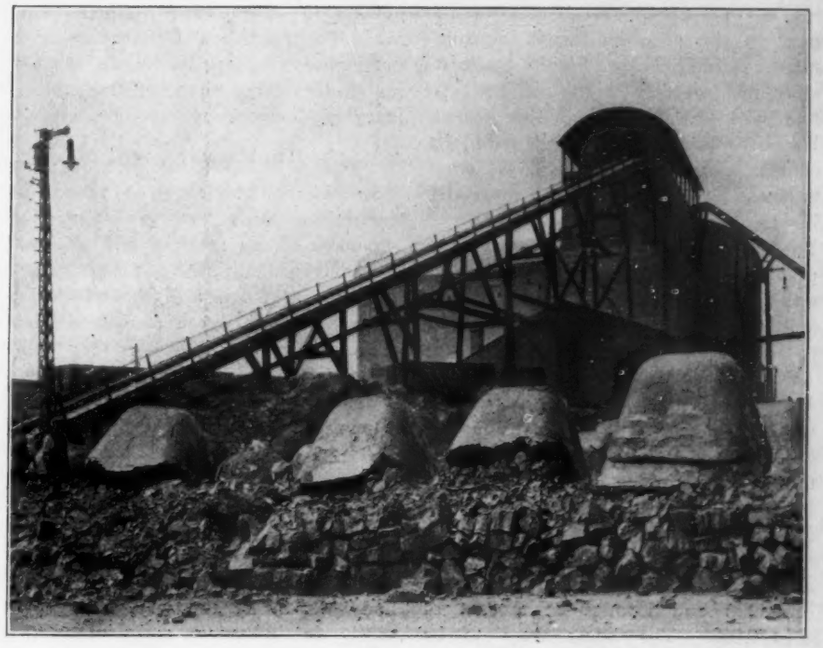
At the present time, arrangements are being made to further extend these properties, for ironstone mines are being opened up in North Wales which will very shortly be in operation, and a mining property has also been acquired in Northamptonshire. The question of ore supplies is causing great anxiety to many large firms, but the firm of Alfred Hickman has taken time by the forelock, and the Oxfordshire, Northamptonshire and Welsh mines put it in a splendid position, with almost inexhaustible supplies.

The Basic Process.

The firm has had its full share of prosperity during the recent boom. Sir Alfred, with his usual shrewdness and forethought, was one of the first to realize the possibility of the basic process on its introduction many years ago, and a splendid trade in this line has been built up. The completely modern character of the great Spring Vale establishment makes it almost incongruous, situated as it is in the heart of a district whose weakness for years past has been the old fashioned character of many of the existing plants. Sir Alfred seems to have found an immediate market for the basic steel and for a great variety of purposes the softness and weldability of this metal makes it ideal. At the present time, the firm has six months' orders on the books for all sorts of steel, with electrical steel and round bars as specialties. Regular quantities are sent to Glasgow and on the Tyne, and to Edinburgh. It is a remarkable fact that occasional parcels go to America into the heart of the steel district, in defiance of the tariffs.

There is an interesting manufacture connected with Spring Vale called tarmac. The cinder is taken hot from the furnace and, after being broken to the sizes required, is passed through a vessel containing boiling tar, pitch and resin. The cinder never having been allowed to become cold, contains no moisture and absorbs the volatile oils of the tar in every pore. It is thereby rendered absolutely impervious to moisture and consequently lasts much longer than any road material now in use; moreover, it is always clean and free from dust. Here also is produced the famous Bilston basic slag which contains as much as 22 per cent of phosphoric acid and is largely bought for the purpose of mixing with inferior slags to make them marketable.

The great establishment finds employment for about 1,700 workmen, with whom it is gratifying to know the firm is on the best of terms. Some time ago, Sir Alfred conceded the eight hours shift to the furnacemen so that the establishment is now run with a triple shift, as far as the furnacemen are concerned. The fur-



View of Stacks on Ladle Side, Plant of Sir Alfred Hickman, Ltd.

Open-Hearth Department of Plant of Alfred Hickman, Ltd.

naces work admirably, and will turn out about 600 tons per week.

Great Canal Plans.

In only one direction can Sir Alfred be said to have failed in realizing his projects, and that is in regard to the proposed canal improvement. Unlike some South Staffordshire ironmasters, he has no fault to find with the location of his works. He considers Staffordshire from its central position "As good a place to make steel as there is, especially having regard to its local market." But an undoubted disadvantage is the practical dependence upon the railways for the transfer of raw material and the conveyance of finished goods to the ports.

Some years ago a committee was formed, of which Sir Alfred Hickman was chairman, for the purpose of carrying out a scheme for improving the canal communication between the Midlands and the ports of the Severn and the Thames. Surveys were made and it was proposed to widen and deepen the canals between Birmingham and London at a cost of £1,250,000. The boats were to be propelled by small electric motors with overhead cables in a similar manner to electric tramways. The canal companies were approached and arrangements were partially come to by which the canals were to be acquired on the basis of their existing revenues being secured. It was calculated that freights to London could be reduced about 4 shillings a ton. At this time, however, it had become evident that the Manchester ship canal was a failure so far at any rate as the original shareholders were concerned and it was felt that it would be of no use to appeal to the public for funds.

The only other resource possible was to enlist the support of the municipalities concerned and it was believed that all would have followed if Birmingham could have been induced to take the lead; a mere two-penny rate would have been sufficient, and undoubtedly the ratable value of the property in Birmingham would have been enhanced by many times that amount.

The Birmingham corporation, after full consideration and inquiry, however, decided not to entertain the proposal and so it was given up.

The scheme for a ship canal, although it has so far failed to materialize, is far from having been entirely abandoned. At the present time, the canals commission is sitting, and all the evidence so far emphasizes the great need for a ship canal between the Midland iron, coal and pottery district and the ports. It seems almost certain that at no distant date Sir Alfred's labors will bear fruit. But it appears to be a case of one generation sowing and another reaping. To the Black Country baronet must always belong the credit of having done a large share of the preliminary spade work on this question.

His Many Honors.

Sir Alfred's honors and offices in themselves constitute a suggestive summary of his services and achievements. In addition to being knight and baronet, he is a J. P. and D. L.; he was until he retired from Parliament a member of the advisory committee of the Commercial Intelligence Branch of the Board of Trade; he is a past president of the British Iron Trade Association, and a member of the council of the Iron and Steel Institute, and of the Mining Association of Great Britain, as well as a member of the executive committee of the Associated Chambers of Commerce, a body which, by the way, has grown vastly in influence and importance during recent years. His literary achievements include a work on "Improved Means of Water Communication Between the Midlands and the Ports of London, Liverpool and Bristol," and he has compiled much important matter on railway rates. He represented the Staffordshire iron and allied trades before the Board of Trade and joint committees of Lords and Commons in connection with the prolonged inquiries into railway rates and canal tolls, and succeeded in obtaining many important advantages for his district.

His title will in due course descend to his grandson, Alfred Edward Hickman, a lieutenant in the King's Dragoon Guards, who is now serving with his regiment in South Africa.

The Black Country baronet has been such an ardent, active and practical politician that this sphere of his labors would constitute a chapter in itself. He has been for many years one of the most valuable assets of the Conservative party in the Midlands. His political career commenced in 1880, when he contested the Borough of Wolverhampton against Mr. Villiers, of corn law repeal fame, and Sir Henry Fowler. The first time of asking was a failure, but five years later he secured the seat for West Wolverhampton, and has held it until 1907, except for the period from 1886 to 1892. For this small defeat, Sir Alfred got a consolation in '92 in his thumping majority of 1,116. At the next election following this in 1900, the Liberals allowed him a walk-over, not only in recognition of his extremely strong position, but as a testimony to the fact that a large share of Sir Alfred's services were rendered to the district for the general good, regardless of party.

A Remarkable Tribute.

Probably no incident of the 1906 election caused more widespread regret than the rejection of Sir Alfred Hickman, his somewhat ungrateful constituency preferring T. F. Richards, a Labor candidate. A fund was shortly afterwards opened, with the object of substantially recognizing his political, municipal and social services to the borough for over 20 years. The sequel to this was a great gathering on Jan. 29 of last year in the Drill Hall, Wolverhampton, when in the presence of a large crowd of friends Sir Alfred was handed an address and a valuable service of silver plate.

The address, designed by J. J. Brownsword, head-master of Wolverhampton School of Art, was enclosed in a silver repousse frame pierced and inlaid with pearl shell, the whole being mounted on a background of dull mahogany. The design was based on the honesty "plant." Some of the seed vessels were in repousse, while others were in pearl shell. In the center of the upper part of the frame, were Sir Alfred's arms in translucent enamel and gold. On the left was the motto: "He sits high in all the people's hearts," and on the right: "It will be a joy to us all to recall this some day." The lower portion of the design consisted of a group, "Honesty," supporting the address. The address itself was on vellum richly illuminated in colors and embossed gold.

The address, after acknowledging on behalf of the Conservatives and Unionists his political services, concluded: "The 4,226 subscribers to the gift now offered you represent all social grades of our local community, but the fact that the large majority of them belong to the working class will, we think, be particularly pleasing to you as showing that in their opinion you have allowed no class prejudices to influence you in the consideration and support you have always given to the just and reasonable claims of labor. That you may be long spared to enjoy a well earned rest in this locality for which you have done so much and where your

name is a household word, is our cordial wish and fervent hope."

Lord Dartmouth's Address.

Lord Dartmouth presided over the gathering and among those present were the Countess of Dartmouth, Lady Joan Legge, H. Staveley Hill, M. P., and many prominent South Staffordshire ironmasters. The secretary, Gough Allen, recalled the remarkable fact that in 1880 Sir Alfred was presented with three pieces of silver forming a very handsome dessert service, in recognition of his fight in that election, and eight pieces to complete that service formed the chief part of the present gift by the same eminent artist in silver, the Chevalier Morel Ladenil, the remainder consisting of an oval jardiniere and a loving cup with the address. Lord Dartmouth made the presentation, paying a warm tribute to Sir Alfred Hickman's work.

Sir Alfred in his acknowledgement mentioned another remarkable coincidence which would seem to be quite without precedent, namely that Lord Dartmouth's father made the earlier presentation to him 26 years before, and Sir Alfred declared that in all his parliamentary career he had never given a vote or advocated a policy that was not designed to benefit the great masses of the people. This declaration was emphasized by a hearty outburst of cheering, a similar endorsement following the further declaration that in his retirement he left no enemies behind him.

To the inquiry of the interviewer whether he would again seek parliamentary honors and responsibilities Sir Alfred gave a prompt and emphatic negative; but, as already indicated, he will still continue his energetic work for traders outside parliament.

We are able to give a view of Sir Alfred's beautiful residence, Wightwick, built by himself many years ago, and which has for years been the center of many social and philanthropic movements. Our views also include, in addition to a recent lifelike portrait of himself, some photographs of the works, which give some idea of their magnitude and up-to-date character.

In Private Life.

Our sketch would not be complete without some reference to the famous ironmaster's lighter and recreative activities. He is as keen a sportsman now as he was in his younger days. He is very fond of hunting and shooting and is legitimately proud of the two facts that he is the oldest member of the Albrighton Hunt, and that he has taken out a game certificate without intermission for 59 years. During the hunting season he constantly utilized the "short Friday" arrangement in the house of commons to get down to Wightwick for a week-end spin with the hounds. He is also an enthusiastic motorist and the owner of some of the finest specimens of these modern vehicles. His shooting has been done practically all over the country, and he has managed to reconcile his parliamentary labors with a visit to the highlands of Scotland for grouse shooting and deer stalking. He received his first gift of a gun from his uncle, a landed proprietor in Shropshire, when he was only 12 years of age, and he has been shooting in some way or other ever since. At the present time he is tenant of Dunbeath Castle, Caithness. In festive gatherings he has always had the reputation of being a jolly good fellow and has even been known to sing a comic song at a Conservative ward dinner.

The evening of the baronet's strenuous life finds him still busy in numerous spheres of congenial activity, as eager as ever to serve his day and generation, probably without a single enemy and the object of much regard often rising to affection among friends and acquaintances of all classes and parties.

A FOUNDRY BUSINESS ON THE PACIFIC COAST

A Description of the Union Iron Works, Spokane, Wash.

By H. Cole Estep.

West of the Rocky Mountains and east of the Cascades lies a broad plateau region, 500 miles wide, of which the city of Spokane, Wash., is the natural northern metropolis. Conditions surrounding the operation of commercial foundries in this region are in many respects quite different from those found either in the east or on the Pacific coast. In order to acquaint the readers of The Iron Trade Review with these conditions and with the characteristics of the typical foundry of this Inland Empire country—as it is called—this article is written. The firm whose plant and methods of business are to be described as typical of the region is the Union Iron Works of Spokane.

The few cents differential per 100 pounds in the freight rates between Pittsburg and Spokane in favor of pig iron and coke over finished machinery is not sufficient to permit any firm located in the Inland Empire to engage in the manufacture of any regular line of heavy machinery. From a western standpoint this is a very unfortunate and lamentable situation. We find, therefore, that the business done by the Union Iron Works is of two kinds: Repair jobs of all sorts on mining, lumbering, power plant and agricultural machinery, and the manufacture, to special order, of certain kinds of heavy machinery not requiring a great amount of fine machine tooling, such as melting pots for the local lead and copper smelters, saw mill and flour mill machinery, mining machinery, marine engines, horizontal tubular boilers, etc. Another factor preventing the manufacture of regular lines is the continued unsettled labor situation, the discussion of which will be taken up more in detail subsequently.

In nine years the plant of the Union Iron Works has grown from a little "two by four" shop employing 17 men, with an invested capital of about $2,000, to an extensive works occupying two city blocks, employing 250 men, and representing an investment of $350,000. This growth is not phenomenal but is on a par with the corresponding growth of the surrounding community in population and wealth. The foundry at present is using 1,200 tons of pig iron per year. The plant is electrically driven and lighted throughout, the motors being arranged and belted to the machines on the group system. The operation of the plant requires 350 horsepower, which energy is bought for $25 per horsepower-year.

The new foundry building, constructed of brick and entirely fire-proof, is 172 feet by 90 feet and is situated so as to afford easy communication by means of a tram railway with the machine shop and the structural shop. The molding room is 172 by 60 feet, and is provided with the usual conveniences of a modern jobbing foundry. The cupolas, storage bins, core rooms, brass foundry and cleaning rooms are arranged conveniently along one side. Owing to the heterogene-

ous character of the work done no molding machines are used.

The pig and scrap are stored in the yard back of the foundry building. An electrically driven, single rail, crane trolley, built by the Alliance Machine Co., is used for transporting the iron from the storage yard to the charging floor. This crane runway is 225 feet long and will be extended about 100 feet further to the rear end of the yard.

This trolley has proven itself to be a very efficient method of handling bulky material. The coke is brought to the side door of the foundry on the railroad cars; here it is dumped into a bin from which an electrically driven bucket elevator raises it to the charging floor level. Space is provided on the charging floor for six carloads of coke.

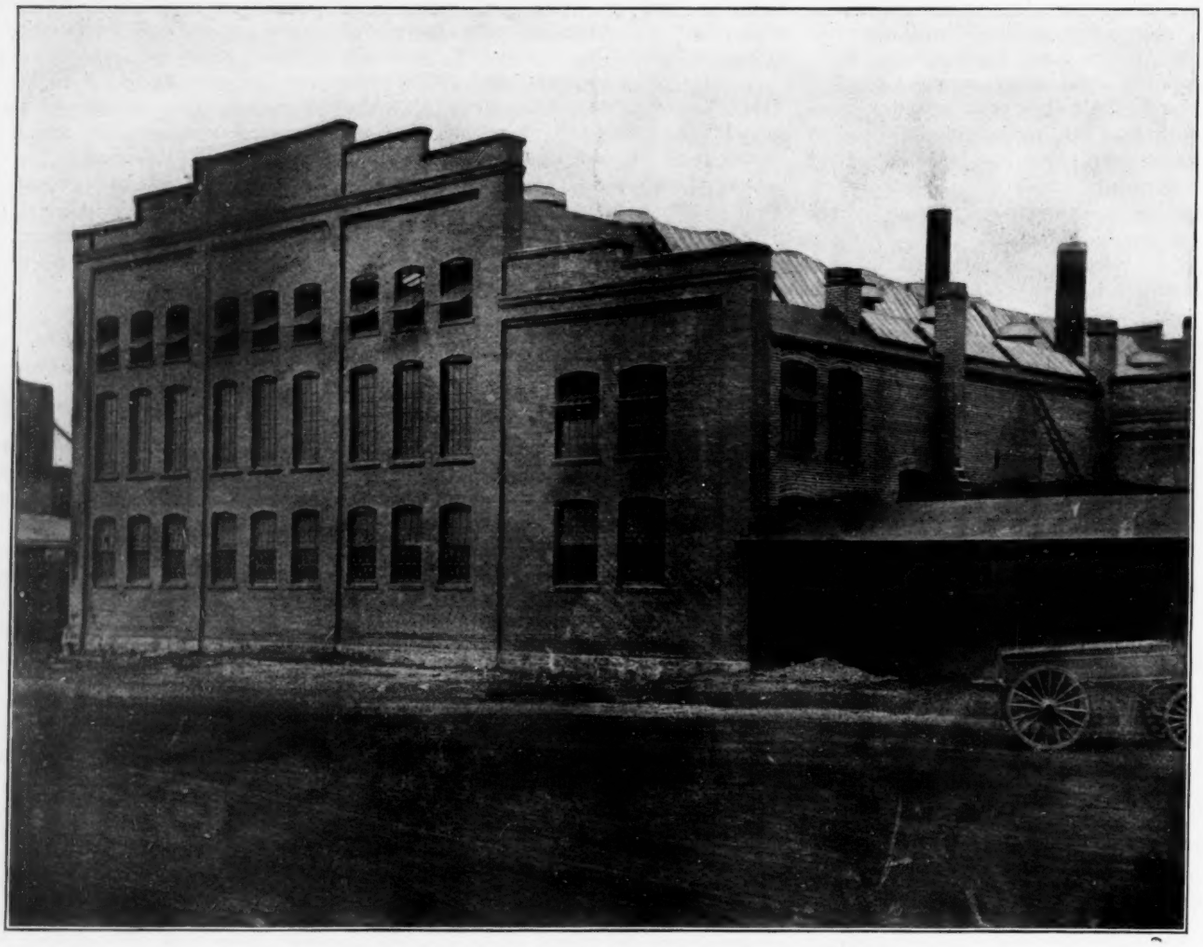
Two cupolas, 48 and 54 inches diameter respectively, conveniently situated near the center of the molding room, are served from this charging floor. These cupolas were designed by H. E. MacCamy, were built at the Union Iron Works, and embody two original features that have a marked effect on their convenience and economy of operation.

The tuyeres, instead of being built like nozzles with the constricted openings inward, are made in the reverse fashion. They are trumpet shaped with the larger openings turned toward the inside. This has the effect of reducing the velocity of the entering air, causing it to spread, and results in a remarkably evenly distributed blast and in exceptional economy. With good coke a melting ratio of 1 to 12 has been obtained. One to 10 is a common occurrence. The introduction of these tuyeres has increased the efficiency of the cupolas 30 per cent. The tuyeres of the 48-inch cupola are 3 inches deep and have a total area of 226 square inches.

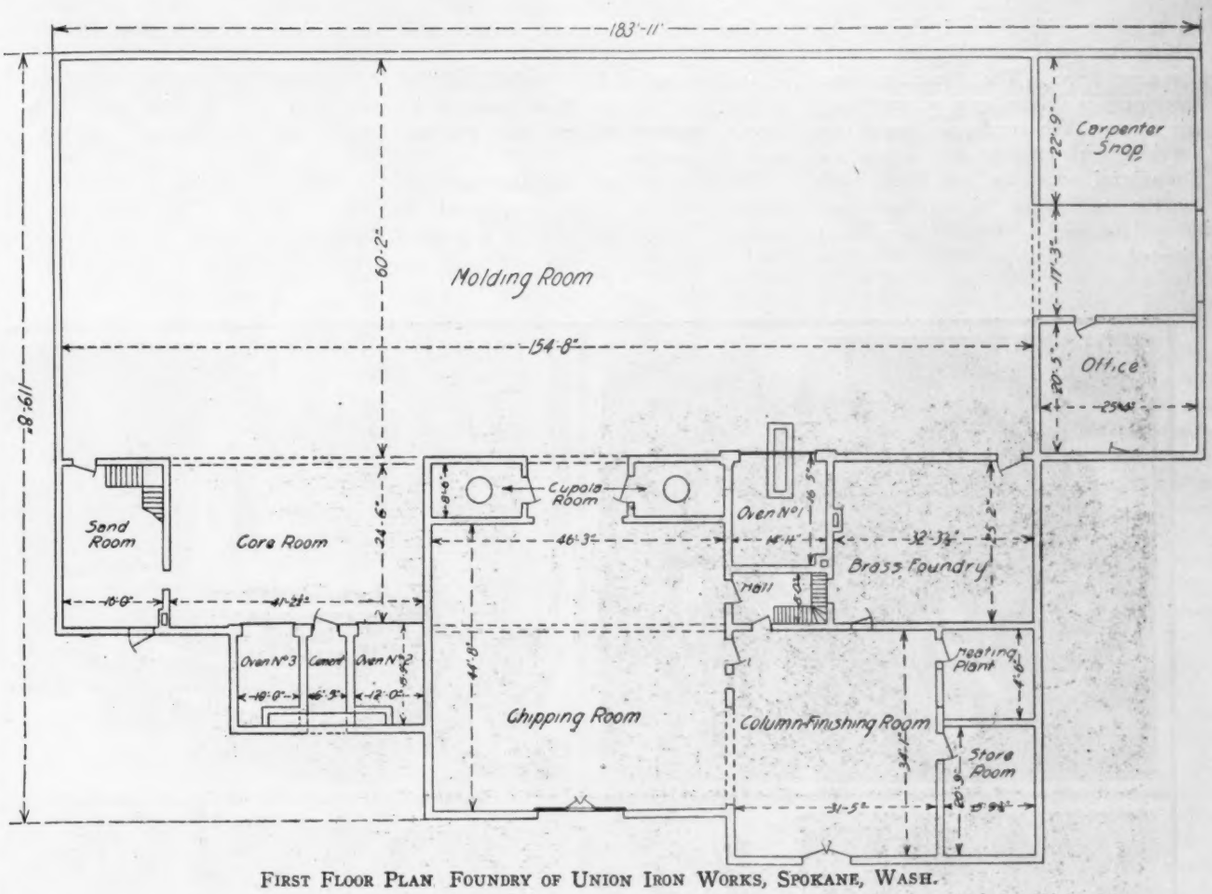
Each of these cupolas is entirely enclosed in a fire-proof brick chamber. One side of the chamber is furnished with a good sized sheet iron door. Near the bottom of this door is an opening 6 inches square, through which a bar for dropping the bottom of the cupola can be introduced. This design permits the immediate dropping of the bottom without danger or inconvenience, and allows the slag and ashes to be thoroughly quenched in the fire-proof chamber before any attempt is made to remove them.

The molding floor is served by a 20-ton, motor-driven, Niles foundry crane of 60 feet span. The crane runway extends out through the rear of the foundry building, spanning the flask storage yard. Heavy flasks are handled directly by this crane, and provision is being made for using it to load heavy castings directly on the cars. The single rail trolley, mentioned in the foregoing in connection with the charging floor, is designed to connect with the main traveling crane and the two together form a simple, cheap and complete system of internal transportation for the foundry.

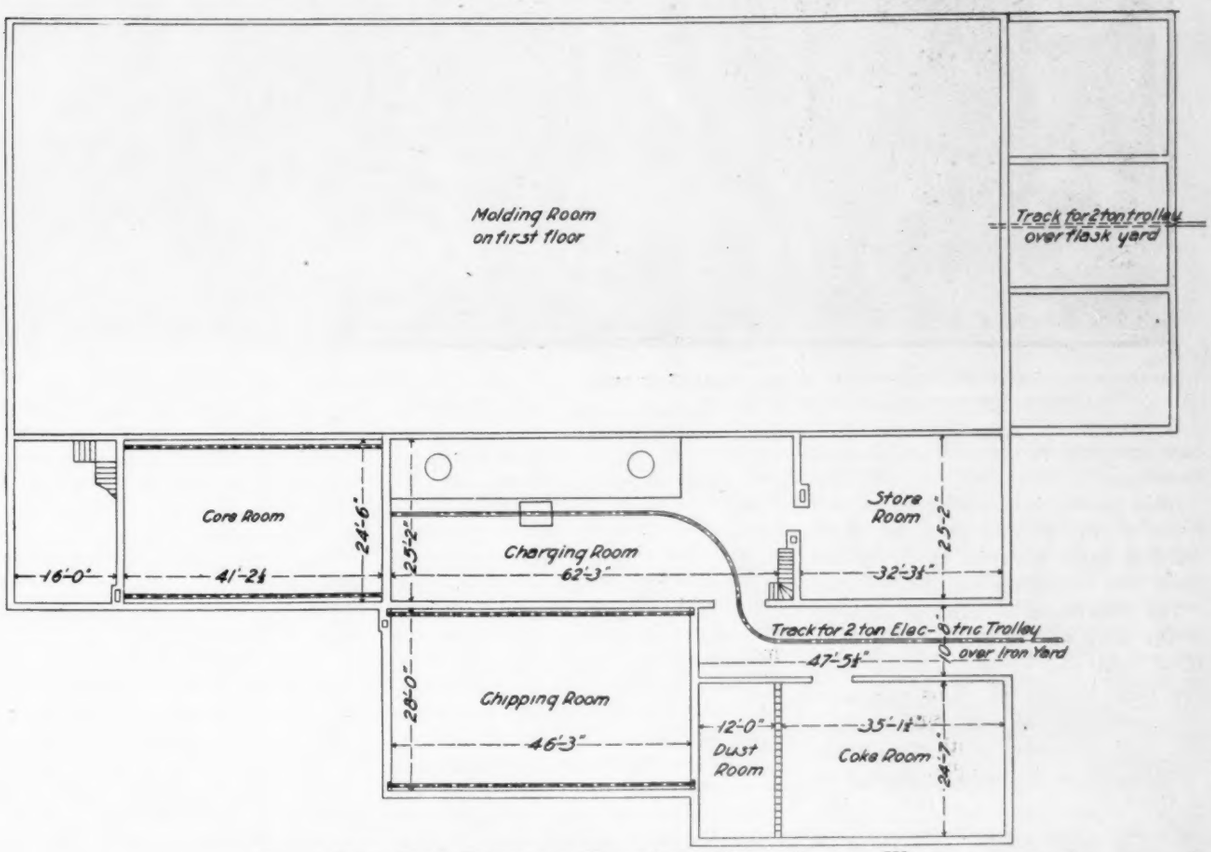
The cleaning room is admirably located at the center of one side of the molding room, adjacent to the side passageway to the machine shop. It is provided with two 48-inch tumbling barrels; a third will be installed short-



EXTERIOR OF FOUNDRY, UNION IRON WORKS, SPOKANE, WASH.



First Floor Plan. Foundry of Union Iron Works, Spokane, Wash.



Second Floor Plan, Foundry of Union Iron Works, Spokane, Wash.

ly, together with a small elevator for raising the gates and chippings to the charging floor. The cleaning room machinery is driven by a separate electric motor; the tumbling barrels are provided with efficient dust extractors. Thoughtful provision has been made for the welfare of the employes and every reasonable means has been adopted to eliminate the obnoxious dust prevalent in the average cleaning room.

Adjacent to the cleaning room is a room 32 by 40 feet used for brass molding, fitted with the necessary furnaces and appliances for this purpose.

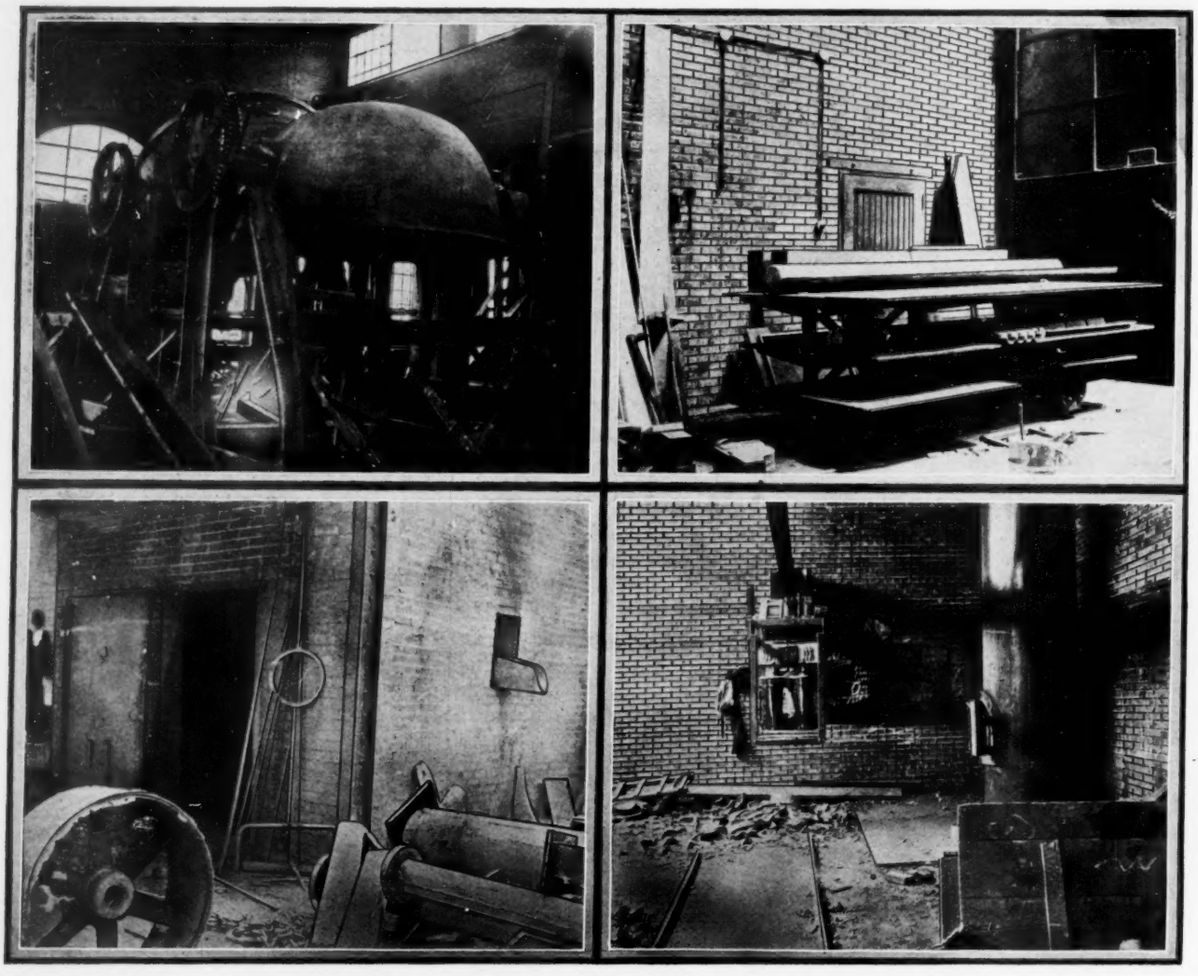
The core room is situated adjacent to the front end of the molding floor. It is light and roomy and the storage bins are handy. The two large core ovens are 15 feet square and 9 feet high, provided with core trucks running out to the molding floor. One of these core ovens is of the continuously fired type; the contents of any one tray can be removed without disturbing the temperature of the other trays.

At the rear of the foundry building, within reach of the main crane, is located a modern pattern shop and pattern store-room.

The heating and lighting arrangements, features often neglected in foundry design, are carefully worked out. Half of the wall space of the two ends of the building is glass and two large skylights extend the full length of the roof. In any ordinary weather no artificial light is necessary in the day time. Full provision is made, however, for artificial lighting, using both electric incandescent and arc lights—the latter are used for the molding room. More than the usual number of ventilators are fitted to the roof. The heating and ventilating is effected by a forced hot air system. The air is driven by a 110-inch fan over a nest of 1-inch steam pipes and is then forced through ducts carried under the floor and up through pilasters in the walls of the molding room to registers located about 12 feet from the floor.

Although the state of Washington has extensive iron deposits they are as yet practically undeveloped. All the iron must be imported from the east. This necessitates carrying a heavy stock of raw material. The inventory often amounts to $40,000. Good sound coke, free from sulphur, is obtained from Fernie, British Columbia, 100 miles north of Spokane. This coke costs $9.75 per ton, delivered to the works. Sixty cents per ton duty is required on this imported coke. Inasmuch as good coke cannot be obtained elsewhere at present within a reasonable distance this duty is merely an added burden to the iron industries of the Inland Empire region.

The officers of the company characterized the western labor situation as "bad." Strikes are frequent and disturbing. The manufacturers are making a fight for an open shop, for that is about the only principle on which a western plant can be operated profitably. The Union Iron Works recently discharged all its union



CHARACTERISTIC PRODUCTS—MELTING POTS FOR LOCAL SMELTERS. CUPOLA, COMPLETELY ENCLOSED IN BRICK.

CORES ON CORE BUGGY. CHARGING FLOOR OF 48-INCH CUPOLA AND ELECTRIC TROLLEY.

men, who had gone on strike, demanding an eight-hour day with no reduction of wages, and are now operating with a crew of non-union men. It can be said for the union men that they are not given to violence and the business goes on without interruption. On account of the varied character of the work all the men are paid by the day. The present scale for molders is $3.75 per day of nine hours; for machinists 40 to 45 cents per hour. Labor conditions are continually unsettled; it is difficult to get full crews of good men; men are plentiful, but competent men are scarce; wages are high and all of these conditions join to hinder the fullest development of the western iron business.

SCRAP AND RAIL STORAGE, WITH SINGLE RAIL TROLLEY, UNION IRON WORKS.

In spite of these troubles and the distance from developed sources of raw material the industry has grown rapidly, constantly keeping pace with the increase in population. With the growth of more settled conditions of population and labor and the opening of the local iron deposits, it is hoped that soon some regular lines of manufacture may be established.

The officers of the Union Iron Works are: E. J. Roberts, president; A. Corbin, vice president; M. Fitzpaterick, general manager; and H. E. MacCamy, superintendent.

Figures compiled by Southern Pacific railroad officials indicate that in 1906 the Pacific system of the Southern Pacific had 1,198 locomotives and 26,148 freight cars. Since then 184 locomotives and 5,429 freight cars have been received or ordered.

AMONG THE MACHINE TOOL BUILDERS OF CINCINNATI.

(Editorial Correspondence.)

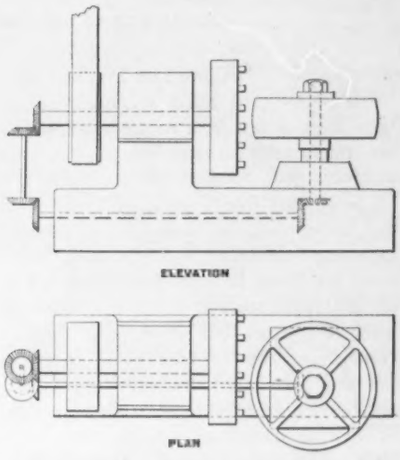
Grinding Drill Columns.

It is interesting to note the different procedure in different shops on the same work. Take, for instance, the finishing of drill columns. Of late years, manufacturers of fine tools have been grinding every part that could be ground, including columns of drills. At the Cincinnati Machine Tool Co., these are ground in a special two-head, grinding machine, built for the purpose. The Mueller Machine Tool Co. uses a grinding attachment mounted on a large swing lathe, driving the wheels by individual motors. Both methods seem to finish the work within the necessary limits of error, although possibly the special machine does the work a little more rapidly. Of course, there is the disadvantage in using the grinding attachment on the lathe that a tool is out of service for turning whenever grinding is to be done. Unless, however, the demand for lathe work is greater than the capacity of the shop, this is not such a disadvantage as it might seem, as the cost of the lathe and attachments is probably less than that of the grinding machine, and if the grinding machine is not kept in operation, quite constantly, there is considerable money invested in an expensive machine which is lying idle, manifestly an unprofitable proceeding.

Speaking of grinding, the American Tool Works Co. uses a magnetic chuck when grinding small pieces of thin section, as washers, collars, etc. These are ground in a Brown & Sharpe grinder, the magnetic chuck being placed at right angles to the emery wheel and being rotated. The boy operating the machine simply slips the piece to be ground against the surface of the chuck and throws on the current when the piece is held with sufficient force for grinding purposes. When the grinding has been completed, the switch is opened, the piece drops off and a new one is inserted. The saving in time is great, and furthermore, there is no possibility of springing or marring the pieces by gripping them in a jaw chuck.

Pulley Crowning Machine.

A home-made machine of interest in the R. K. LeBlond Machine Tool Co.'s shop is one for crowning pulleys. It comprises an old lathe, on the head spindle of which is placed a face mill with inserted teeth. The carriage has been provided with a vertical spindle which can be rotated by power, and on which



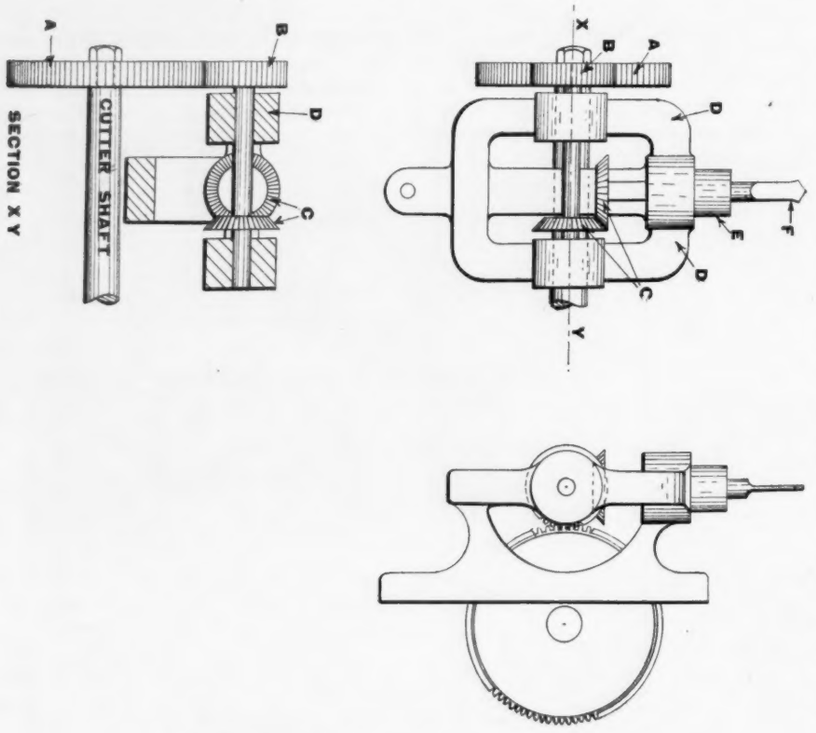
ARRANGEMENT FOR CROWNING PULLEYS.

the pulley, to be crowned, is carried. The pulley is brought up to the face mill and as the mill cuts, the pulley is rotated on its spindle. The center line of the mill spindle is in the same horizontal plane with the center line of the pulley face and the amount of crowning is determined by the distance apart horizontally of the pulley center and mill center. The accompanying sketch shows the principle of the machine, but not the details.

Other Kinds of Special Machines at the LeBlond Shop.

In addition to its large use of special machines, the LeBlond company adapts

regular machines largely to special purposes. A case in point is the use of the automatic turret lathe to the manufacture of lathe parts. The development of the lathe during the past few years has necessitated the use of much stronger working parts. Where cast iron was formerly considered good enough steel is now used, which in a measure, simplifies the manufacturing problem. Take, for instance, gear blanks. Where these are made of cast iron several different tools had to be used, and often several chuckings were necessary. With steel, however, the blank is formed and finished in an automatic turret lathe, the material being cut from bar stock and finished complete, ready for the gear cutter in the one machine. Not only spur gear, but bevel gear blanks are made this way, as well as innumerable other parts.



ARRANGEMENT FOR DRILLING IN THE GEAR CUTTER.

Drilling in the Automatic Gear Cutter.

Speaking of gear cutters brings up an interesting adaptation of the Brown & Sharpe automatic gear cutter, which the writer saw at the Mueller Machine Tool Co. plant. The feed plate of the Mueller radial drill comprises a number of circles of holes into which pins are set, the latter meshing with a gear. It was described in detail in THE IRON TRADE REVIEW of Feb. 15, 1906. As the holes must be accurately spaced, it was either necessary to make an expensive jig, and drill then in an ordinary drill press, or else have some method whereby the plates could be indexed accurately and the holes drilled. An attachment, shown in the accompanying sketch, was devised for the Brown & Sharpe automatic gear cutter, which, while inexpensive, does the trick as satisfactorily as a much more expensive rig.

The attachment comprises the frame D, in which are carried the two bevel gears C. The attachment is slipped over the cutter spindle of the machine and the spur gear A is put on the end of the spindle. This meshes with the pinion B, which, in turn, drives the bevel gear C. In the spindle E is inserted a flat drill of the requisite diameter. The plate to be drilled is carried by the spindle on which the gear blank is usually carried. The proper gear combinations having been made for indexing, the drill advances, drills the hole, recedes, the plate indexes and the operation proceeds until the complete circle has been drilled. All the circles of one size in a lot of plates are drilled, and the machine is then changed to drill the next circle. It would be hard to imagine anything simpler, and yet which would serve the purpose as well as this little device.

Benches with Removable Surfaces.

The Mueller Machine Tool Co.'s plant is small, but it contains many interesting devices, nevertheless. The tools are all driven from a line shaft separated into three parts by clutches, so that no more sections of shafting need be run than are necessary. The shafts and countershafts are suspended directly from the roof purlins by means of angle plate hangers, thus doing away with stringers. The shop is extremely light, with ribbed glass windows on three sides (the office extends across the fourth side) and 10 skylights let into the roof. The benches used are worthy of note. In the first place, they are set out from the wall a short distance to permit the hot air from the radiators to pass up back of them instead of flowing out at the front, to the discomfort of the men. Instead of being composed of a single two-inch plank, the benches are provided with a surface of 7/8-inch maple, tongued and grooved. These boards extend across the bench from front to back, and when they are worn or the surface destroyed in any one place it is a simple matter to remove the few defective boards, and replace them with new ones, which can be driven into place from the front of the bench.

Another noteworthy feature of this shop is the provision for loading wagons. A driveway from the street extends into the building, the entrance being closed by a rolling steel shutter. The floor of the shop is at such an elevation that the bottom of a wagon on the driveway is level with the floor. This driveway is accessible directly from the erecting floor of the shop and is of a great convenience in loading machinery which can be rolled on the waiting truck without any lifting whatever. Incidentally the crane serving the erecting floor extends over the driveway. The shop is provided with a basement with a concrete floor, which gives storage space for castings and other raw material, which while often wanted quickly is in the way on the main floor of the shop. An elevator connects the two floors, and cranes extend to the elevator on both levels.

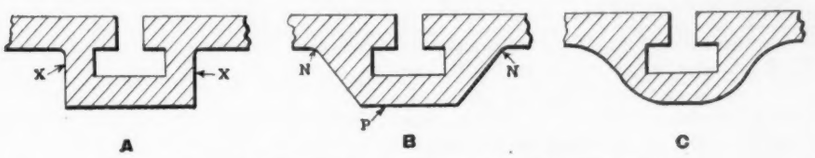
A Large Drill for Light Work.

The Cincinnati Machine Tool Co. manufactures drill presses, and has developed some interesting ideas. Among them may be noted the drill known as the 24-36-inch machine. This is a drill made up of the parts usually put together to form a 24-inch drill. The column, however, is cast with an overhang sufficiently great to permit the spindle being placed the same distance from the column that it is in the 36-inch machine. The knee supporting the table is likewise extended to permit the table to be central under the spindle. This tool is designed for handling pieces of comparatively large size but light weight, as automobile parts, etc. It fills a need for a tool which will take parts of large swing and yet which do not need a tool of the weight their size would indicate.

The base plates of the drills made by this company are worthy of attention. The hole for the column is generously reinforced on both sides and in addition

a rib extends entirely around the hole on the under side of the base. A good number of ribs are provided, radiating from the column hole to the edges of the base, and longitudinal ribs are also provided. The column is flared at the base and is fastened to the base plate by cap screws, all in plain sight. The drill may be a little heavier than others, but it is all due to the proper use of pig iron just where it is needed. The drill is a sturdy looking machine and does not belie its looks.

There are a number of interesting things to be observed in the Cincinnati Machine Tool Co.'s shop practice. One is the consideration which has been given to problems of the foundry in designing the machines. Let us examine, for instance, the table of the upright drill. Like all other drills it has radial T-slots. The usual way of casting T-slots is shown at A in the sketch. Very little draft is given to sides X, and the pattern has to be drawn straight out of the sand for the entire depth of the slot. After a little consideration the form shown at B, was decided on. The sides X were given a sharp slant, which left the sand easily, and did not tend to break the mold so much as the form shown at A. It was thought, however, that this could be improved on, and by putting a fillet at N in B, and adding the segment of a circle at P the shape shown at C was obtained. This possesses all the advantages of the earlier shape. In addition it is neater, and

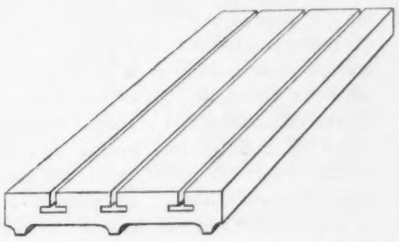


DEVELOPMENT OF THE T-SLOT BY CINCINNATI MACHINE TOOL CO.

stronger, although a trifle heavier, which is no practical objection to a drill table. In molding this table a metal pattern is used for the table proper, and a spider of cherry wood is laid in the mold for the T-slot reinforcements.

Drilling Plate.

A handy little attachment for drilling used by the Cincinnati Machine Tool Co. is the plate shown in the sketch. This is simply a plate about 12 x 16 inches with T-slots cast in one face and three ribs cast on the other. The two faces are planed parallel. Instead of bolting a piece of work to the drill table, it is bolted to this plate which is massive enough, and develops sufficient friction between itself and the table to prevent the work turning with the drill. It is, however, light enough to be readily moved around with one hand permitting the machinist to center his work under the drill easily. Where several holes are to be drilled in one piece the advantages are obvious. The light plate can be shifted much more easily and quickly than the drill table, and the table is not marred or put out of true by mistreatment. When the plate is worn, a light cut on both sides with a planer or shaper



DRILLING PLATE USED BY CINCINNATI MACHINE TOOL CO.

serves to true it up again and render it as good as new. In addition to using this plate in its own shop, the Cincinnati Machine Tool Co. is manufacturing them as a commercial proposition, and quite recently shipped some to Japan.

Modern Methods and Increased Production.

The increase in production due to the use of modern methods, high-speed steel and machine tools adapted to the particular work which they have to do is a subject close to the hearts of all machine tool manufacturers. An improperly designed machine or one designed previous to the introduction of high-speed steel has little opportunity to show a profit in competing with machines expressly designed to utilize the high efficiency of these steels. An analysis of the shop costs often shows that heavy gains can be made by scrapping the older and substituting more productive machinery. In a circular recently issued by the American Tool Works Co. a number of examples were cited showing the improvement in time of production made by the use of machinery designed to utilize to the utmost the possibilities of high-speed steels when coupled with a close study of the best methods. We present herewith a few of the examples as taken from that circular.

LATHE WORK.

Roughing and finishing a cone pulley; old time two hours and 40 minutes, new time 38 minutes. Roughing and finishing cast iron column; old time 18¾ hours, new time eight hours.

PLANING.

Roughing and finishing lathe bed; old time 17 hours, new time nine hours.

RADIAL DRILLING.

Shaper columns; old time 12 hours, new time 3½ hours. Drilling 72 holes, 29/32-inch diameter, 1⅝ inches deep; old time two hours, new time ½ hour.

MACHINERY DEALERS TO MEET.

Plans for their joint meeting at the Jefferson hotel, Richmond, Va., May 13-15, were formulated at a meeting held at that place on Jan. 24 by committees appointed by the American Supply and Machinery Manufacturers' Association, the National Supply and Machinery Dealers' Association and the Southern Supply and Machinery Dealers' Association. A large number of reservations have already been made at the Jefferson hotel, indicating a record attendance.

The complete program will be ready for distribution early in April. As already mapped out, it contains many radical departures from previous meetings of the three associations, eliminating all features which have proven undesirable, and including a wide variety of trade matters of lively interest. In this connection, F. D. Mitchell, secretary-treasurer of the American association, says:

"Speakers of national reputation, whose connection with the commercial life of the nation will make their views of the greatest moment to all attending the convention, will be selected to address the joint meetings. The speakers, drawn from the membership of the associations, will make addresses on live topics of vital importance, and it is felt by the committees that when their program is ready every member of each organization will feel that he cannot afford to be absent."

The committees, which met to arrange the program, were made up as follows:

From the American association: M. W. Mix, Dodge Mfg. Co., Mishawaka, Ind.; E. H. Hargrave, The Cincinnati Tool Co., Cincinnati; C. F. Aaron, New York Leather Belting Co., New York; F. A. Hall, Yale & Towne Mfg. Co., New York; D. K. Swartwout, The Ohio Blower Co., Cleveland; W. M. Hood, The Lunkenheimer Co., Cincinnati; and F. D. Mitchell, secretary-treasurer, New York.

From the National association: George Puchta, Queen City Supply Co., Cincinnati; and A. T. Anderson, secretary-treasurer, Cleveland.

From the Southern association: J. C. Miller, Miller Supply Co., Huntington, W. Va.; Alvin M. Smith, Smith-Courtney Co., Richmond, Va.; Hunter B. Frischkorn, Hunter B. Frischkorn, Richmond, Va.; and Levin Joynes, Southern Railway Supply Co., Richmond, Va.

METHODS OF ORDERING AND ROUTING WORK [1]

By Oscar E. Perrigo.

In a well organized and properly systematized manufacturing establishment not a thing should be made, or even commenced, not a blow struck, without definite orders issued on proper authority. This may seem a very broad assertion and one that literally carried out would occasion necessary delay and expense. Properly understood in all its bearings the usual objections that may be advanced against such a plan will soon disappear. The principal and almost the only exception to the rule will be that of an emergency of sufficient importance to justify the disregard of all regulations for the moment and require the most prompt and decisive action possible. Cases of this kind will be self-evident, as fire, the imminent danger of accident to men, machines or building, etc. In these cases, any man of whatever rank is expected to act quickly and efficiently to avoid, check or ameliorate the effects of an accident, and when the necessity for such action has passed, to report his action, the reasons for it, and the resulting effect, to his immediate superior. Such action may extend to the countermanding or temporarily suspending the orders of his superior, in which case, when the emergency has passed, he will report in the manner indicated to the official whose order he has interfered with.

The reasons for the strict enforcement of the regulation requiring all orders to be written and duly issued by properly constituted authority before any action is taken, are many and important. Some of the principal ones are these: We shall have a system of cost accounting that will naturally assume that the expense is duly authorized. Being duly authorized we must have a written record of that fact. Written orders are necessary for the reason that verbal orders may be misunderstood, disputed or forgotten. The moral effect of having the orders in writing will have much to do in stimulating the prompt and efficient carrying out of their provisions. Every man having his orders in writing feels safe in taking whatever action may be necessary to fulfill the obligations and responsibilities imposed by and incident to the operation of the order. Written orders, the initial copy of which is issued and authenticated by the signature of the head of the establishment furnish subordinate officials ample authority for making such orders for labor, requisitions for material in store, purchase of material, etc., as may be necessary for fulfilling the conditions of the order.

The regular orders necessary in a manufacturing establishment may be divided into four general classes, namely:

1. Production orders, for manufacturing of the regular product of the concern, and which cover the expense of labor, material, and the purchase of the necessary material.
2. Maintenance of plant, authorizing necessary repairs of buildings, fences, walls, fixtures and similar expense relating to the fixed plant.
3. Equipment, including the building or purchasing of new machines, attachments, tools, etc., and their installation in the plant.
4. Operation of plant, covering the necessary labor and materials used in operating the plant.

In this article the first class only of these orders, or production orders will be considered. All orders for manufacturing machinery and tools to be sold to customers, whether for new machines or parts of machines to be built in accordance with a special order; all alterations or special changes to suit customers, should originate with the controlling head of the establishment, usually the general manager, and should bear his signature.

The form and subject matter of these orders will depend very much upon the character of the product which it covers and the particular system in use in the establishment. In some cases it may simply specify the building of a certain number of machines designated by a certain class of type and of certain dimensions, as "forty 16-inch by 8-foot engine lathes." In another instance it may be for a new machine having special features, and including regular or special attachments, tools and fixtures, and all these conditions may be specified in detail. Or, the order may refer to a sheet of specifications accompanying it and being really a part of the order.

The order may be to make certain parts in large quantities, which, when completed, are placed in a finished parts storeroom, whence they are drawn by requisition, upon the authority of an order covering the assembling of certain parts into a certain group of parts; which group of parts are assembled into a complete machine, upon the authority of the proper order to do so.

An example of such methods will best illustrate the system. Let it be assumed that the product is engine lathes. Production orders will be issued for all small parts, particularly such as are produced by automatic screw machines, turret lathes and the like, for quantities of from 200 to 1,000 of each part. These orders will cover shafts, studs, levers, gears, special bolts, screws, etc. These will be made and delivered to the finished parts division of the storeroom. A sufficient

NO._____ **STOCK PRODUCTION ORDER** DATE_____

MAKE FOR STOCK THE FOLLOWING
MACHINES ATTACHMENTS TOOLS FIXTURES

QUANTITY	DESCRIPTION	SIZE

ORDER COMPLETED

GENERAL MANAGER

Fig. 1—General Order for Stock. Actual Size 4 x 6 Inches.

NO._____ **SPECIAL PRODUCTION ORDER** DATE_____

MAKE FOR_____ ADDRESS _____

THEIR NO. _____ | THEIR DATE_____ | TO BE SHIPPED _____

DATE COMPLETED

GENERAL MANAGER

Fig. 2—General Order for Special Work. Actual Size 4 x 6 Inches.

[1] Fifth of a series of articles on cost keeping and shop management.

quantity of all these parts having been thus stored, orders will be issued, for instance, for, say, forty 16-inch engine lathe headstocks; another for a like number of tailstocks; a third for the carriages; another for aprons; others for compound rests, follow rests, center rests, taper attachments, and so on. Each of these orders will cover the making of the larger and more important parts and will authorize the drawing from stores of such small parts as have been previously made and stored for such contingencies; and also for assembling each of these groups of parts. As these groups of parts are assembled and inspected they are stored, subject to requisitions authorized by the final assembling orders.

Orders are next issued for assembling the complete machines. As there will be various lengths of beds required in the lot of 40 lathes, they must be specified in the order; as, say eight with six-foot beds, 12 with eight-foot beds, and so on. This order covers the casting and machining of these beds of various lengths, the making of their necessary appendages as lead screws, feed rods, and boxes, cabinets, etc., and the assembling, not only of these parts with the bed casting, but that of drawing from stores the other groups of parts as headstocks, tailstocks, carriages, etc., fitting and assembling them into complete lathes, ready for inspection.

As has been suggested, there are several methods of issuing the orders for the routine of work. One of the most simple and direct is by the use of the card orders shown in Figs. 1, 2 and 3.

Assuming that a lot of a certain kind of machines are to be built the general manager will have two card blanks, as shown in Fig. 2., properly filled out specifying briefly what is wanted, for instance, as follows:

Forty 16-inch swing engine lathes, viz.:
8 (2 with taper attachments) 6-foot beds.
12 (3 with taper attachments) 8-foot beds.
13 (3 with taper attachments) 10-foot beds.
7 (1 with taper attachment) 12-foot beds.

These orders the general manager will sign, sending one to the factory manager and retaining one for his office file. This completes his duty so far as ordering goes.

Upon receipt of this order by the factory manager he will have his clerk fill out the necessary sub-production orders on card blanks, Fig. 3, for the different groups of parts composing these machines. Ordinarily, these would be: Beds and appendages, headstocks, tailstocks, carriages, compound rests, aprons, feed works with change gears, center, follow and full swing rest, countershafts. These orders will require the factory manager's punch rather than his signature to make them effective. One copy of these orders will be sent to the production engineer (or such official as has charge of this work) and one copy will be filed in the factory manager's office.

The production engineer will then cause to be made out upon a card blank, shown in Fig. 3, but of a different color, and without punch mark or signature, orders for each of the parts which must be made. This, of course, will not include such small parts as are made in quantities, kept in the finished parts stores, and drawn out when required for assembling. Copies of this order will be sent to each department interested in the work of this particular order, always including the drafting room, the cost clerk and the store keeper. The sub-production order, being made for a group of parts, is understood to include the work assembled and ready, in connection with the other component groups to be erected into a complete machine, the erecting work requiring, however, an additional sub-production order from the factory manager, which may be issued at any time during the interval between the receipt of the general manager's order and the completion of the several groups of parts.

The storekeeper is charged with the duty of keeping a supply of all small parts on hand. He will have a predetermined maximum and minimum within the limits of which he is expected to keep his stock. When necessary, he will fill out sub-production orders (see Fig. 3) for the parts required. These he will send to the factory manager for approval, after which they will be handled the same as other orders of their class.

In practice it will be found that in a large proportion of machinery manufactured there will be from 40 to 75 per cent of the parts that may be manufactured in quantities of from 200 to 2,000 pieces, under one sub-production order, and kept in stock for future use. This will very much reduce the cost of machining, and the clerical work necessary in keeping the records of the progress and cost of the work will be reduced to a small fraction of that required when each individual part is made on a separate order, as is done in many manufacturing establishments at the present time.

When a single machine is to be built in a special manner, or when one of the machines in stock is to be changed to suit the special requirements of a customer, the general manager's order for the work will be upon the card blank, shown in Fig. 2, which will be a general specification of the machine. This will be sent to the factory manager, who will have his clerk make out such sub-production orders as may be necessary for this particular case, following in a general manner the methods prescribed for stock work. The sub-production orders will be on a card blank, as shown in Fig. 3, except that it will differ in color, and the word "Stock" will be replaced by the word "Special."

GEN ORD NO. _____ **SUB PRODUCTION ORDER** DATE _____
STOCK

SERIAL NO. _____	PIECE NO. _____	DRWG NO. _____	TO BE COMPLETED _____
QUANTITY	DESCRIPTION		

COMPLETED _____ FACTORY ⊙ MANAGER

FIG. 3—SHOP ORDER TO DEPARTMENT. ACTUAL SIZE 3 x 5 INCHES.

The colors for these several classes of card orders may be: General manager's stock production orders, Fig. 1, white. Special production orders, pink. Sub-production orders for groups of parts, light blue. For single parts, manila. For storekeeper's use in ordering parts for storeroom stock, gray. For special work, light red. For erecting complete machines, red.

Should any parts be spoiled, work will be stopped, the sub-production order prominently marked "Spoiled" and sent to the production engineer, who will cause to be issued a sub-production order on a light green card.

All sub-production order cards have on the back a blank for a material ac-

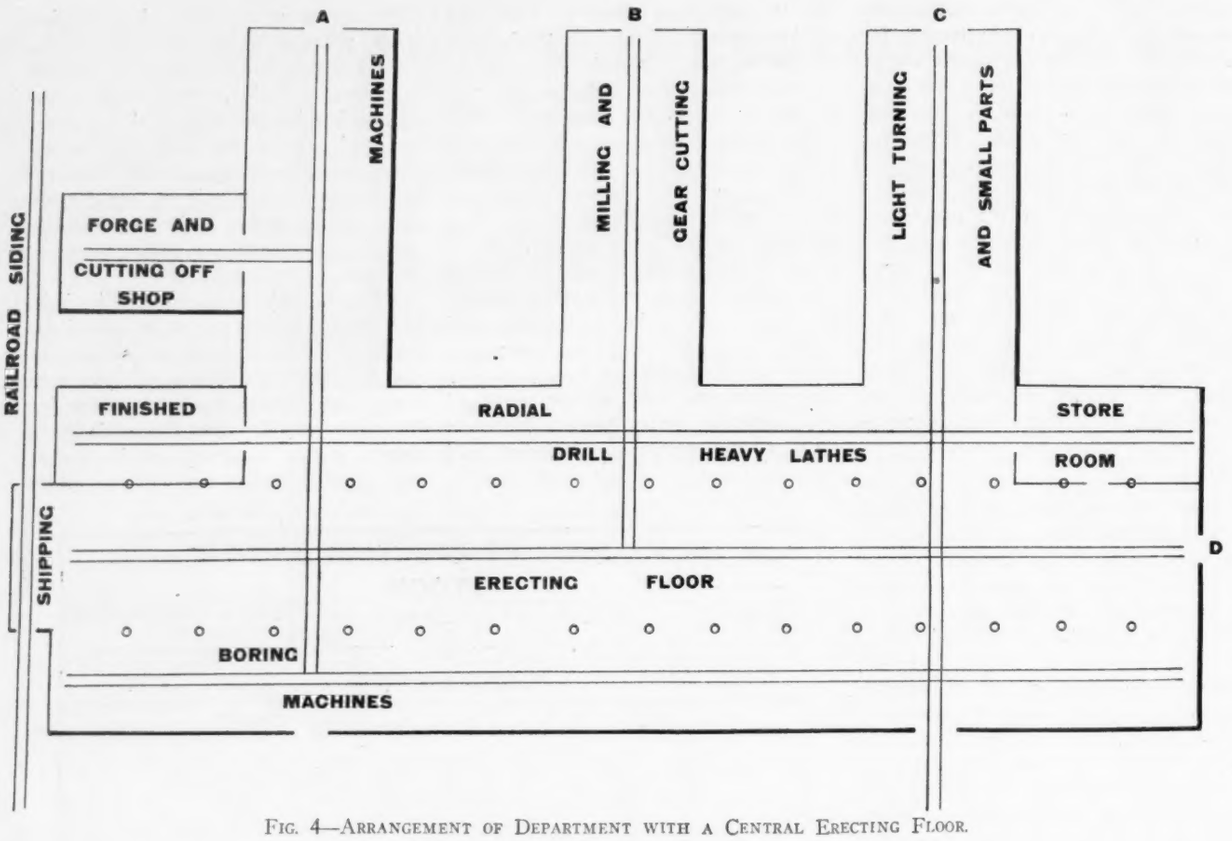


FIG. 4—ARRANGEMENT OF DEPARTMENT WITH A CENTRAL ERECTING FLOOR.

count, the use of which will be described in a future article.

When orders of whatever kind are to be pushed ahead of the regular product they are called rush orders and have the word "Rush" in heavy-faced letters stamped on them with a rubber stamp and red ink.

In all cases, when an order is received by the drafting room, the necessary blue prints and necessary lists of material are furnished to the factory. If the order covers new work, for which drawings and specifications must be made, this work is proceeded with and blue prints and lists furnished as soon as they are ready.

When the work called for on sub-production orders is completed the date of completion will be entered in the lower left-hand corner, the form on the back filled out and the order sent to the factory manager, as his notification that the work has been completed. The order will then be passed over to the production engineer that he may obtain from it any information he may desire, after which he will pass it to the cost clerk, who will make up the cost account and then file it for future reference.

The original production order issued by the general manager is dated when the work is completed, and returned to him. If the factory manager desires to file this order when the work is completed this may be done upon the date of completion being given to the general manager, who may enter it upon the copy of the order which he has kept on file.

The routing of work from the receipt of the castings, forgings, bar stock, etc., will, of course, be governed very largely by the kind of product and the form of the parts of which it is composed.

The important point to be continually kept in mind in routing work is that it shall pass in as direct a line as possible from the point of its receipt in the works to its final destination, with few or no retrograde movements. To accomplish this result successfully the various departments through which the work is to pass should be so arranged with reference to the point of entry, and with each other, as to make this route direct, progressive and by the shortest practicable lines.

While it is true that the loading and unloading of cars, trucks, or whatever form of conveyance is used, may occupy more time than that of moving them from place to place, much of this time may be eliminated by providing a sufficient number of trucks or cars, so that the material may be brought to the machines, taken as needed direct from the car, placed on the machine, and when the machining operations are completed, taken from the machine and loaded upon another car, which will take it to the next department. By this means the time of loading and unloading is practically cut out altogether, as the operator must handle the pieces twice in any event.

If small parts are moved in boxes of the proper size and construction to be handled conveniently, the loading and unloading time may be very materially reduced.

Large castings will naturally go first to the planers. These machines should be located near the point of entry of the castings and very heavy forgings. The planing will usually be followed by the boring and drilling, which departments should adjoin the planing department. For convenience of handling large circular and cylindrical work the heavy lathe department should also be located near the point of entry of castings and heavy forgings.

Thus, it is advisable, particularly in a broad building, to locate the planing department on one side and the heavy lathe department on the other, and at one end of the building. Beyond these departments may be the horizontal and vertical boring mills, radial drills, etc., and beyond them the erecting flour, with shipping facilities at the far end.

In the older form of shops the erecting floor was in the central bay and commanded by the large overhead traveling crane. This arrangement is shown in Fig. 4. It was also customary to provide for lighter machines in galleries running along the sides of the building.

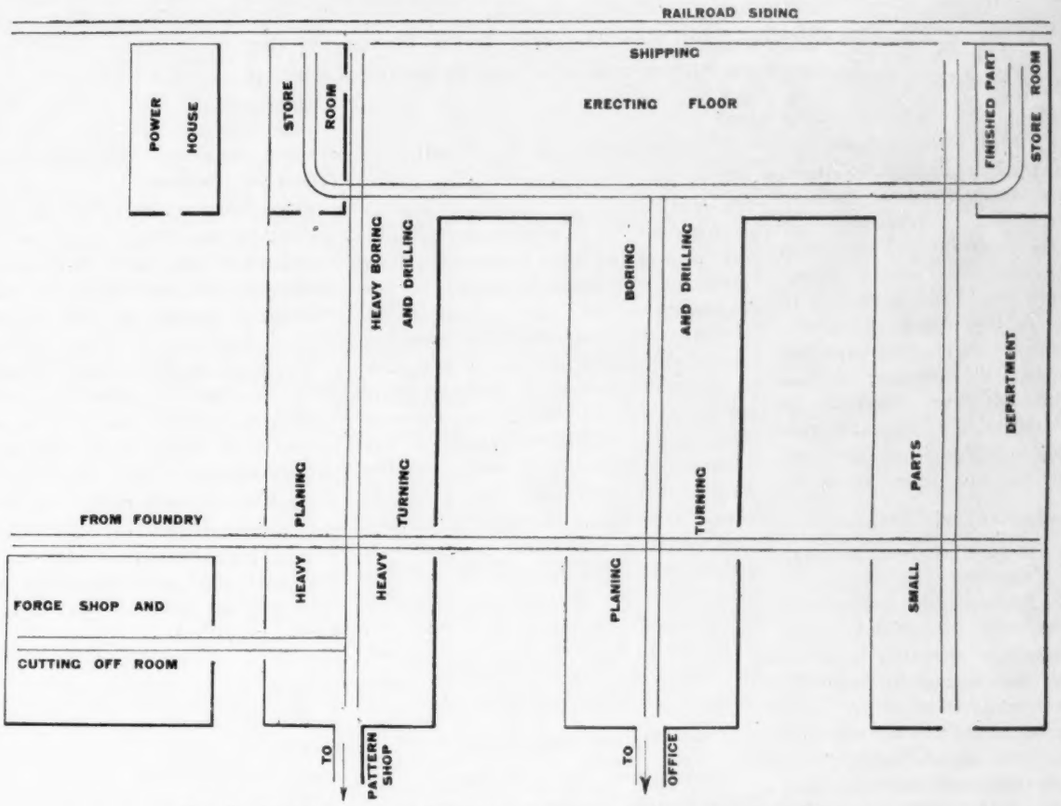


FIG. 5—ARRANGEMENT OF DEPARTMENTS WITH SPECIAL ERECTING BUILDING.

While this plan has a number of advantages, more recent plans place this class of machinery on the ground floor of buildings specially designed for it and located at right angles to the main building, as shown.

In the case shown there are three of these buildings with a department in each. The forge shop is located conveniently to departments using bar stock, as well as to the railroad siding from which it is received. Each of these buildings is connected by shop tracks with the main building and with the store, or stock room at the front and the finished parts store room at the rear of the building.

Should the foundry be on the opposite side of the machine shop buildings, castings would be received at A, B, C and D, as required, thus lessening the length of their route in the shop. As it is, one retrograde movement is necessary for parts made in the departments A, B and C.

A still more modern plan is shown in Fig. 5 wherein the routing of work is better arranged. In this case material is received near the fronts of the manufacturing buildings and is passed progressively to the erecting floor at the rear, or to the finished part storeroom, from which it is drawn for assembling The shop track service is shown in a very simple, yet effective form, and supplements the usual overhead traveling cranes.

In planing new buildings, the study of routing work may be carried out to almost ideal conditions, wherein the design of the building, may be made to conform to departmental requirements, but in rearranging the departments in existing buildings, often located and built without any definite general plan, the engineer will find many perplexing difficulties.

The limits of this article will not permit a discussion of routing work in buildings of more than one floor, as in factories. It may be said in a general way, however, that as the material is received and the shipping done on the ground floor, all material handled in departments on the upper floors must make one retrograde movement. Their routing can generally be confined to this by proper planning, by a proper arrangement of departments and location of the assembling rooms.

FIREPROOFING OF SKYSCRAPERS.

The recent destruction by fire of the thirteen-story Parker building at Nineteenth street and Fourth avenue, New York, has revived discussion over the fireproof qualities of the modern skyscraper. This building, however, could hardly claim compliance with first-class fireproof regulations, inasmuch as reports to the insurance companies show that considerable wood was employed in its construction and large quantities of inflammables were stored in the building.

"The modern type of skyscraper has gone through severer tests than this and has come out of them well," says Paul Starrett, of the George A. Fuller Co., builder of many lofty office buildings. "When a building is piled full of inflammable material and the inflammable material catches fire, fireproof frame and walls cannot keep it from burning. But they can keep a building from taking fire from the outside, and they have done that many times. The modern skyscraper, with steel frame and hollow tile partitions, floors and column covering, is the safest kind of structure known. Such buildings are not only safe for themselves, but they constitute barriers to hinder the spread of a conflagration."

Ernest Flagg, architect of the Singer building, was of the opinion that the Parker building did not deserve the term fireproof, as he said the only really fireproof building was one that had absolutely nothing about it that could burn. Absolutely no wood is used in the Singer building.

THE MALLEABLE IRON INDUSTRY IN 1907

Production Last Year Greatest in the History of the Trade—New Plants and Additions to Melting Capacity

No branch of the foundry trade has recorded as rapid a growth in recent years as the malleable iron industry. This is the more remarkable in view of the substitution of many malleable sections by steel castings especially for railroad work. To the increase in the output of agricultural implements is largely ascribed the phenomenal development of this industry, although the demands of builders of freight and passenger cars for malleable castings have been unparalleled in the last three years.

Production in 1907.

From reports received from the malleable manufacturers, the output in 1907 was 969,399 tons. No comparison can be made with the production of previous years, as statistics are not available. It was estimated, however, that the producing capacity of operative works in the United States on Jan. 1, 1903, was approximately 875,000 tons, and the production for that year was placed at 750,000 tons. The producing capacity, which is now estimated at 1,291,484 tons annually, shows an increase of more than 400,000 tons in four years. In the malleable industry it is exceedingly difficult, however, to make deductions regarding output from the producing capacity, as the nature of the work on which a foundry is operating will govern the tonnage of good castings, and even when the melt is normal, the output may only amount to 50 per cent of the melt owing to the high percentage of discard in the form of gates, runners, etc.

Number of Works.

The total number of works, as compared with 1903, show a gain of only 15, 131 having been reported in operative condition on Jan. 1. Pennsylvania is the only state that suffered a loss in the number of its plants, while Ohio shows an increase of four, Connecticut and Michigan two each, and Illinois, Indiana, Iowa, Kentucky, Missouri, New Jersey, New York, Washington and Wisconsin, one each. Illinois and Ohio lead with 21 works each, while New York and Pennsylvania rank second with 16 each. Illinois, however, leads all other states in output, having produced 205,155 tons in 1907, while Ohio ranks second with 138,830 tons.

Development in the West.

This industry has reached its greatest development in the west, notably in the states of Illinois, Indiana, Ohio and Wisconsin, while in the east, New York and Pennsylvania are by far the largest producers. The output of the 11 plants in Connecticut is comparatively small and this is largely due to the preference of its manufacturers for the cupola as the melting medium. The largest individual plant in the country contains 13 furnaces and its output last year was nearly 45,000 tons. One plant reported a production of only 250 tons, although its cupola was used largely for melting gray iron. In the east a number of small plants reported less than 500 tons each, and with one exception, the works melting their iron in cupolas have comparatively small capacities.

Melting Equipment.

Reports were also received from the manufacturers regarding their melting equipment. These indicate that the cupola is still extensively used in malleable works, no less than 42 being operated on white iron. The air furnace, however, leads with no less than 369 installations and malleable iron is also melted in 21 open-hearth furnaces. The capacity of the air furnace is also being rapidly increased and several plants have recently installed furnaces having an output of from 25 to 35 tons per heat. The open-hearth furnaces average 20 tons, although one of 35 tons has recently been built. There has been practically no change in annealing equipment, although several plants have discarded charging boxes entirely and pack their castings in scale in the furnaces.

The number of small plants operated in 1903 and 1907, as well as their capacities and output is shown in table I. Their melting equipment is shown in table II.

New Construction.

Four malleable iron plants are under construction at present, as follows:

Benton Harbor Malleable Foundry Co., Benton, Harbor, Mich.—This plant will be equipped with one 12-ton air furnace and will shortly be placed in operation.

Ironton Malleable Co., Ironton, O.—Melting equipment will consist of two 25-ton air furnaces.

Tiffin Malleable Iron & Chain Co., Tiffin, O.—This plant is under construction and will be completed within a few months. It will be equipped with one melting furnace of 15 tons capacity.

H. W. Cooper Saddlery Hardware Mfg. Co., Moline, Ill.—This plant is nearing completion and will be placed in operation early in the spring. It will be equipped with two air-furnaces of 10 tons capacity each.

Marinette Iron Mfg. Co., Marinette, Wis.—This concern is contemplating the erection of a malleable plant, although plans have not yet been prepared.

New Plants.

Since July 1, 1906, no less than 13 new plants were placed in operation. During this period the malleable industry recorded its greatest growth. A list of these works is given below:

Terre Haute Malleable & Mfg. Co., Terre Haute, Ind.—Two 12-ton air furnaces. Placed in operation, October, 1906.

Hoopeston Malleable Iron Works, Hoopeston, Ill. — Placed in operation Oct. 1, 1907. Melting equipment consists of one 15-ton air furnace.

Rockford Malleable Iron Works, Rockford, Ill.—This concern occupied its new plant in June, 1907. The producing capacity, as compared with the old plant, will be practically doubled, the melting equipment consisting of two 25-ton air furnaces.

T. H. Symington Co., Corning, N. Y.—This plant was placed in operation about a year ago and is equipped with one air furnace of 12 tons capacity.

Globe Malleable Iron Co., Syracuse, N. Y.—Placed in operation September, 1906. The melting equipment consists of three air furnaces of 12 tons capacity each.

Columbus Malleable Casting Co., Columbus, O.—This plant was placed in operation August 23, 1907, and its melting equipment consists of two air furnaces of 10 and 12 tons capacity each.

Lack Malleable Iron Co., Paducah, Ky.—Placed in operation Sept. 1, 1907. Iron is melted in one cupola.

Galesburg Malleable Casting Co., Galesburg, Ill.—This plant, equipped with one air furnace, was placed in operation Sept. 1, 1907.

Fanner Mfg. Co., Cleveland, O.—This plant was placed in operation April 1, 1907. It is equipped with two air furnaces, of 15 tons capacity each.

David Bradley Mfg. Co., Bradley, Ill.—Commenced operations July, 1906. Plant is equipped with one 5-ton open-hearth furnace and two 15-ton cupolas.

South Side Steel & Malleable Casting Co., Milwaukee, Wis.—Placed in operation October, 1906. Equipped with two 15-ton air furnaces.

Allegheny Valley Malleable Iron Co., New Kensington, Pa.—This plant was first placed in operation late in 1907, and is equipped with two air furnaces of 30 tons capacity each.

Morse Iron Works, Erie, Pa.—Equipped with one 12-ton air furnace. Placed in operation early in 1907.

Additions to Melting Equipment.

The following additions to the melting equipment of existing plants was made during the last 12 months:

Marion Malleable Iron Works, Marion, Ind.—Melting equipment increased by the installation of one 16-ton air furnace.

St. Louis Malleable Casting Co., St. Louis, Mo.—Melting equipment increased by one 20-ton air furnace.

Acme Steel & Malleable Iron Works, Buffalo, N. Y.—Melting equipment increased by the addition of one 13-ton air furnace from 12 to 25 tons.

Illinois Malleable Iron Co., Chicago.—Melting equipment increased by the addition of one 13-ton air furnace.

International Harvester Co., Chicago.—Melting equipment increased by the addition of one 14-ton air furnace.

Erie Malleable Iron Co., Erie, Pa.—Extensive additions to this plant were made during the year and the melting capacity was increased about 3,000 tons annually.

Stanley G. Flagg & Co., Philadelphia, Pa.—Melting equipment increased 25 tons daily.

Albion Malleable Iron Co., Albion, Mich.—Melting capacity of this plant was doubled within the last 12 months.

Northwestern Malleable Iron Co., Milwaukee, Wis.—Melting equipment increased by the addition of one furnace.

Thomas Devlin Mfg. Co., Philadelphia.—Melting equipment increased by the installation of one 15-ton air furnace.

Chicago Malleable Casting Co., West Pullman, Chicago.—Melting equipment increased by the installation of two air furnaces of 12 and 15 tons capacity each.

Table I.

	No. of works 1903.	No. of works 1907.	Increase in No. of works in 4 years.	Decrease in No. of works in 4 years.	Estimated annual capacity of works operative in 1907. Tons.	Production in 1907. Tons.
Alabama	1	1			3,600	
Connecticut	9	11	2		70,400	56,825
Delaware	1	1			25,000	
Illinois	20	21	1		276,940	205,155
Indiana	5	6	1		116,000	96,600
Iowa		1	1		2,500	
Kentucky		1	1		500	
Maryland	1	1			4,000	
Massachusetts	3	3			3,200	3,000
Michigan	6	8	2		94,200	70,700
Minnesota	1	1			12,000	
Missouri	1	2	1		11,600	11,600
New Hampshire	1	1			4,500	
New Jersey	3	4	1		11,250	8,625
New York	15	16	1		152,394	123,107
Ohio	17	21	4		198,000	138,830
Pennsylvania	18	16		2	163,650	109,060
Rhode Island	1	1			1,800	
Tennessee	1	1			13,000	
Washington		1	1		500	
West Virginia	1	1			5,500	
Wisconsin	11	12	1		120,950	91,297
*Scattering						54,600
Total	116	131	17	2	1,291,484	969,399

*This includes the 1907 production of Alabama, Delaware, Iowa, Kentucky, Maryland, Minnesota, New Hampshire, Rhode Island, Tennessee, Washington and West Virginia.

Missouri Malleable Iron Co., East St. Louis, Ill.—Melting equipment increased by the installation of two air furnaces, of 15 and 18 tons capacity each.

United States Malleable Iron Co., Toledo, O.—The melting capacity of this plant was increased 3,000 tons during 1907.

Waukesha Malleable Iron Co., Waukesha, Wis.—Melting equipment of this plant was increased by the addition

Table II.

	No. of air furnaces.	No. of open-hearth furnaces.	No. of cupolas used for melting malleable iron.
Alabama	1		
Connecticut	21	1	10
Delaware	6		
Illinois	74	2	7
Indiana	30	5	1
Iowa	1		
Kentucky			1
Maryland	2		1
Massachusetts			3
Michigan	32		1
Minnesota	3		
Missouri	4	2	
New Hampshire	2		
New Jersey	6		
New York	45	1	6
Ohio	62	1	2
Pennsylvania	32	6	7
Rhode Island	1		
Tennessee	4		
Washington			1
West Virginia	1	1	
Wisconsin	42	2	2
Total	369	21	42

of one 12-ton air furnace.

Ohio Malleable Iron Co., Columbus, O.—Melting equipment increased by the installation of one 15-ton air furnace, and two 12-ton air furnaces were increased to 15 tons capacity.

Ross-Meehan Foundry Co., Chattanooga, Tenn.—The melting equipment of this plant was increased during 1907 by the installation of an additional air furnace of 12 tons capacity.

Beaver Dam Malleable Iron Co., Beaver Dam, Wis.—This concern practically doubled its output within a year, the melting capacity having been increased 9,000 tons annually by the installation of several additional furnaces.

Lakeside Malleable Castings Co., Racine, Wis.—The melting equipment of this plant was increased during the year by the addition of one 15-ton furnace.

National Malleable Castings Co.—The melting capacity of one of the Chicago plants of this corporation was materially increased by the installation of several furnaces.

Grand Rapids Malleable Iron Co., Grand Rapids, Mich.—Melting capacity doubled by the erection of four additional air furnaces.

Malleable Plants in the United States.

A list of the works engaged in the manufacture of malleable castings in the United States is given below:

Alabama.

Western Steel Car & Foundry Co., Anniston.

Connecticut.

Bridgeport Malleable Iron Co., Bridgeport.

Eaton, Cole & Burnham Co., Bridgeport.

Fitch, W. & E. T. Co., New Haven.

Malleable Iron Fittings Co., Branford.

Malleable Iron Works, New Britain.

Naugatuck Malleable Iron Co., Naugatuck.

North, A. B., Co., New Haven.

North & Judd Mfg. Co., New Britain.

Terry, Andrew Co., Terrysville.

Vulcan Iron Works, New Britain.

Woodruff, Walter W., & Sons Co., Mt. Carmel.

Delaware.

Wilmington Malleable Iron Co., Wilmington.

Illinois.

American Car & Foundry Co., Madison.

Bradley, David, Mfg. Co., Bradley.

Chicago Malleable Castings Co., West Pullman, Chicago.

Cooper, H. W., Saddlery Hardware Mfg. Co., Moline.

Crane Co., Chicago.

Forster, Waterbury & Co., Franklin Park.

Galesburg Malleable Iron Co., Galesburg.

Hoopeston Malleable Iron Works, Hoopeston.

Illinois Malleable Iron Co., Chicago.

International Harvester Co., 2 plants, Deering and McCormick, Chicago.

Missouri Malleable Iron Co., East St. Louis.

Moline Malleable Iron Co., St. Charles.

National Malleable Castings Co., Chicago, two plants.

Parlin & Orendorff Co., Canton.

Pratt, William E., Mfg. Co., Joliet.

Rockford Malleable Iron Works, Rockford.

Union Malleable Iron Co., East Moline.

Western Steel Car & Foundry Co., Chicago.

Western Tube Co., Kewanee.

Indiana.

Haskell & Barker Car Co., Michigan City.

Marion Malleable Iron Works, Marion.

National Malleable Castings Co., Indianapolis.

Oliver Chilled Plow Works, South Bend.

Terre Haute Malleable & Mfg. Co., Terre Haute.

Whiteley Malleable Castings Co., Muncie.

Iowa.

Iowa Malleable Iron Co., Fairfield.

Kentucky.

Lack Malleable Iron Co., Paducah.

Maryland.

Baltimore Malleable Iron & Steel Castings Co., Baltimore.

Massachusetts.

Arcade Malleable Iron Co., Worcester.

Belcher Malleable Iron Co., Easton.

Worcester Malleable Iron Co., Worcester.

Michigan.

Albion Malleable Iron Co., Albion.

Benton Harbor Malleable Iron Co., Benton Harbor.

Buhl Malleable Co., Detroit.

Grand Rapids Malleable Iron Co., Grand Rapids.

Michigan Malleable Iron Co., Detroit.

Port Huron Engine & Thresher Co., Port Huron.

Standard Malleable Iron Co., Muskegon.

Western Malleable Steel Co., Detroit.

Minnesota.

Northern Malleable Iron Co., St. Paul.

Missouri.

American Car & Foundry Co., St. Charles.

St. Louis Malleable Casting Co., St. Louis.

New Hampshire.

Laconia Car Co., Laconia.

New Jersey.

American Malleable Co., Bloomfield.

Barlow Foundry Co., Newark.

Meeker Foundry Co., Newark.

Trenton Malleable Iron Co., Trenton.

New York.

Acme Steel & Malleable Iron Works, Buffalo.

American Malleable Co., Lancaster.

Deposit Foundry Co., Deposit.

Frazer & Jones Co., Syracuse.

Globe Malleable Iron Co., Syracuse.

Gould Coupler Co., Depew.

International Harvester Co., Osborne Works, Auburn.

Johnson, Isaac G., & Co., Spuyten Duyvil.

Oriskany Malleable Iron Co., Oriskany.

Pratt & Letchworth Co., Buffalo.

Symington, T. H., Co., Corning.

Syracuse Malleable Iron Works, Syracuse.

Torrance Malleable Iron Co., Green Island, Troy.

Troy Malleable Iron Co., Troy.

Westmoreland Malleable Iron Co., Westmoreland.

Wood, W. A., Mowing & Reaping Machine Co., Hoosick Falls.

Ohio.

American Malleable Castings Co., Marion.

Canton Malleable Iron Co., Canton.

Chisholm & Moore Mfg. Co., Cleveland.

Columbus Malleable Castings Co., Columbus.

Dayton Malleable Iron Co., Dayton.

Eberhard Mfg. Co., Cleveland.

Elbel Co., Canton.

Fanner Mfg. Co., Cleveland.

Findlay Axe & Tool Co., Findlay.

Haven Malleable Castings Co., Cincinnati.

International Harvester Co., two works, Champion Works and Champion Branch, Springfield.

Ironton Malleable Iron Co., Ironton.

National Malleable Castings Co., Cleveland.

National Malleable Castings Co., Toledo.

Ohio Malleable Iron Co., Columbus.

Pittsburg Valve & Fittings Co., Barberton.

Springfield Malleable Iron Co., Springfield.

Tiffin Malleable Iron & Chain Co., Tiffin.

United States Malleable Iron Co., Toledo.

Zanesville Malleable Iron Co., Zanesville.

Pennsylvania.

Allegheny Valley Malleable Iron Co., New Kensington.

Devlin, Thos., Mfg. Co., Philadelphia.

Erie Malleable Iron Co., Erie.

Flagg, Stanley G., & Co., Philadelphia.

Fort Pitt Malleable Iron Co., Pittsburg.

Jarecki Mfg. Co., Erie.

Kelly & Jones Co., Greensburg.

McConway & Torley Co., Pittsburg.

Meadville Malleable Iron Co., Meadville.

Morse Iron Works, Erie.

Oil Well Supply Co., Oil City.

Pennsylvania Malleable Co., McKees Rocks, Pittsburg.

Phila. Hardware & Malleable Iron Works, Philadelphia.

Pittsburg Malleable Iron Co., Pittsburg.

Sterlingworth Railway Supply Co., Easton.

York Mfg. Co., York.

Rhode Island.

Rhode Island Malleable Iron Works, Hills Grove.

Tennessee.

Ross-Meehan Foundry Co., Chattanooga.

Washington.

Acme Malleable Iron Foundry Co., Puyallup.

West Virginia.

West Virginia Malleable Iron Co., Point Pleasant.

Wisconsin.

Beaver Dam Malleable Iron Co., Beaver Dam.

Belle City Malleable Iron Co., Racine.

Globe Foundry & Machine Co., Sheboygan.

Lakeside Malleable Castings Co., Racine.

Milwaukee Malleable Iron Works, Milwaukee.

Northwestern Malleable Iron Co., Milwaukee.

Racine Malleable & Wrought Iron Co., Racine.

South Side Steel & Malleable Casting Co., Milwaukee.

Stowell Mfg. & Foundry Co., South Milwaukee.

Waukesha Malleable Iron Co., Waukesha.

West Allis Malleable Iron & Chain Belt Mfg. Co., West Allis.

Wisconsin Malleable Iron Co., Milwaukee.

PANS AND TOTE BOXES FOR FACTORIES.

The accompanying illustrations show some pressed steel pans and tote boxes made by the Kilbourne and Jacobs Mfg. Co., Columbus, O., for use in machine shops, foundries, bolt works, etc. The "J" pan, shown in Fig. 1, is adapted to handling castings, bolts, rivets, nails and parts of machines for all purposes for which tote boxes are used. It is pressed from a single sheet of heavy steel and is without a seam in its construction. The inside is, therefore, perfectly smooth. It is given great rigidity and strength by a flange along its top or a steel rod beaded around its edge, if preferred. It will not buckle or crush when loaded to its capacity with heaviest material. These pans are furnished with rolled steel handles, as shown. They require but little storage space, since their tapering form admits of their being nested.

In cases where a few boxes of special size, to fit racks or shelves, are desired, and where, on this account the cost of a special die for the stamping of pressed steel boxes would be prohibitory, the company furnishes riveted steel tote boxes of the type shown in Fig. 2. These boxes are furnished in any gage steel. The corners are flanged and firmly riveted and the top edge is folded, giving the box great rigidity and strength. These boxes may be also furnished in any size. They have a flat bottom and are very well adapted to stacking. They are widely used in foundries.

Another new, useful and convenient article of foundry and machine shop equipment is the steel barrel and truck shown in Fig. 3. These barrels have a corrugated steel bottom. The bottoms are stamped from a single sheet of steel, which process corrugates the steel and forms a flange 1 inch deep. This process gives great strength where it is most needed and where the ordinary barrel is weak. These barrels may be also furnished with the stamped bottom having the flange, but without the corrugation. The shell is made from one piece of steel and has only one side seam which is securely riveted. The barrels are bound at the top with a heavy band. When furnished with the truck the barrel is equipped with malleable iron trunnions which are riveted to the barrel a little above the center. This perfect balance permits a barrel which contains as much as 1,000 pounds to be easily dumped while on the truck. The truck handles, braces and axles are made of steel. The wheels are 13⅝ inches diameter.

FIG. 3—STEEL BARREL AND TRUCK.

RECORD WORK IN TIRE BORING.

At the Chicago shops of the Chicago & Northwestern railway the value of the introduction of special machine tools to increase the output is illustrated by records made on a new boring machine. The tool was built by the Niles-Bement-Pond Co. after designs made in co-operation with Robert Quayle, superintendent of motive power of the Chicago & Northwestern railway. The estimated weight of the mill is 60,000 pounds. It is of the double-head type, of 96 inches capacity and with a fixed cross rail. The table, 94 inches diameter, is driven through an outside rack by a 25-horsepower variable speed motor with a two to one range.

This machine, served by one machinist and two helpers and using two cranes, bored 54 56-inch tires in nine hours, without running the machine above the usual working speed. This is at the rate of six tires per hour, all delays incident to shop operation included. At another time, using one crane instead of two, forty-one 56-inch tires were bored in nine hours. By the addition of one crane the output was increased 32 per cent, which shows the importance of providing ample auxiliary facilities for all machines.

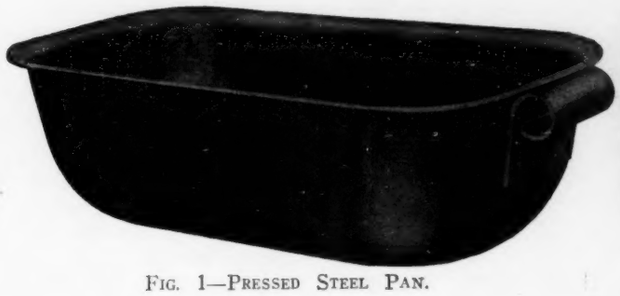


FIG. 1—PRESSED STEEL PAN.

FIG. 2—RIVETED STEEL TOTE BOX.

PYROMETRY IN THE STEEL WORKS.

A great amount of attention is being paid, just now, at Sheffield, to pyrometry, and following the lecture recently delivered by Professor McWilliam before the Sheffield Society of Engineers and Metallurgists, a meeting of the same body was held on Jan. 15 for the purpose of discussing the subject of "Pyrometry in the Works." W. F. Beardshaw presided.

Cosmo Johns opened the discussion, dealing especially with the use of the pyrometer in determining the highest temperatures. With regard to the Wanner and Fery pyrometers there were serious difficulties attending their application under works conditions. He gave a resume of the physical laws and conceptions upon which the instrument was based and said the fortunate fact that these conditions are often realized in works practice has enabled the instruments to be used to a larger extent than would have been anticipated. The speaker dealt also with Kirchoff's somewhat mysterious conception of a "black body," the laws that govern the emission of a radiant energy from that ideal "black body," and the attempts to realize that conception in research work and also under works conditions.

A CONTRAST IN CASTINGS.

The accompanying illustration shows two steel castings made from the same heat by the St. Louis Steel Foundry, St. Louis. The larger one weighs

A 22-OUNCE, AND A 4,750-POUND STEEL CASTING.

4,750 pounds and the smaller one 22 ounces. Both were perfect castings, were true to pattern and clean of cores. The maker states that they are of dense metal and will machine as nicely as drop forgings. The St. Louis Steel Foundry has been in operation for about six months and is turning out a high grade of work.

We are indebted to W. M. Carr, 120, Liberty street., New York, for the information concerning the Chute process of steel making, which appeared in THE IRON TRADE REVIEW of Jan. 23.

THE RACINE POWER HACK SAW.

The accompanying illustrations show the Racine power hack saw designed and marketed by the Racine Gas Engine Co., Racine Junction, Wis. It is stated that this machine will cut discs from 6-inch crucible steel bars to a thickness of 3/64 inch, with a variation in thickness not exceeding 0.01 inch. It is adapted to cut any shape of material, as rounds, squares, structural shapes, brass tubing, pipe, etc. The good results accomplished are due to the fact, it is claimed, that on the back stroke the saw blade is not dragged over the work. This not only increases the life of the blade by reducing wear on the teeth, but allows time for the blade to cool somewhat between cuts, permitting it to be operated at a greater speed.

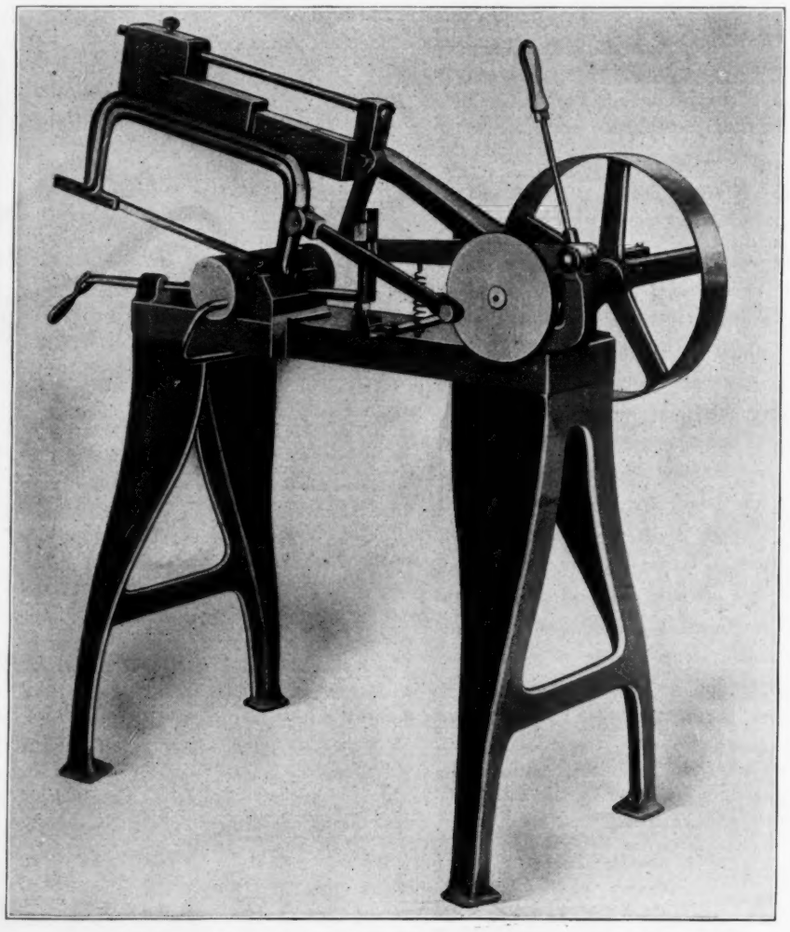


FIG. 1—THE RACINE POWER HACK SAW.

Referring to Fig. 2, the weight A is moved backward and forward on the bar B to regulate the feed. The saw frame is carried by a guide C made in one piece and connected to the driving shaft. There are thus no joints or connections to get out of line. The guide is very heavy and has a large wearing surface with provision for taking up wear. The saw frame D is made heavy to eliminate vibration and springing. It is slotted to receive a special device E for holding the blade square with the vise. A screw for tightening the saw blade is shown at F, and provision is made to carry blades 10 to 14 inches in length, according to the size of the work to be sawed. The vise is operated by the handle G permanently attached to the vise screw. A gage H is provided, which is of service when it is necessary to cut duplicate lengths.

The main drive of the saw is through the clutch pulley J controlled by a lever I, the pulley being of sufficient diameter to drive the machine at full capacity without the use of reducing gears. The depth of cut is regulated when desired by the screw K. The saw guide is lifted by the cam L, mounted on the main shaft and which has a greater radius on one-half of its circumference than the other. A roller T mounted on a lever M carried by the bracket N bears

against the cam, being actuated by a spring S. The cam, in revolving, raises and lowers the lever M, which carries two dogs O side by side. When the lever is raised, the dogs

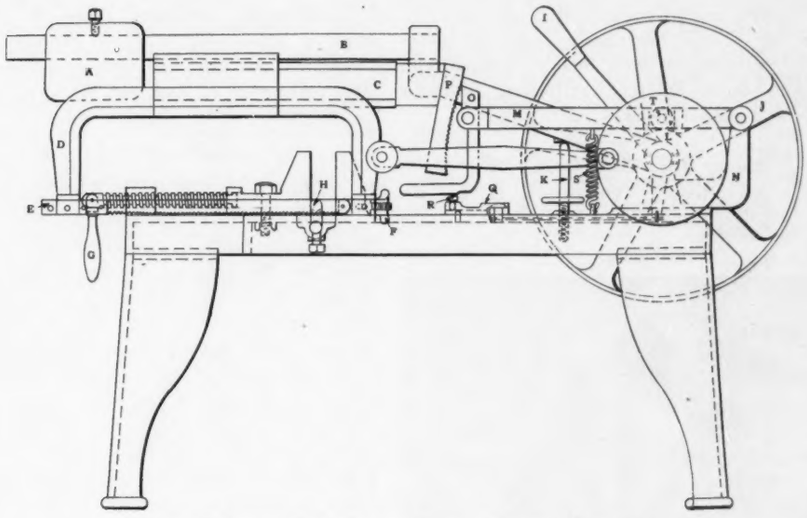


FIG. 2—GENERAL DRAWING OF RACINE POWER HACK SAW.

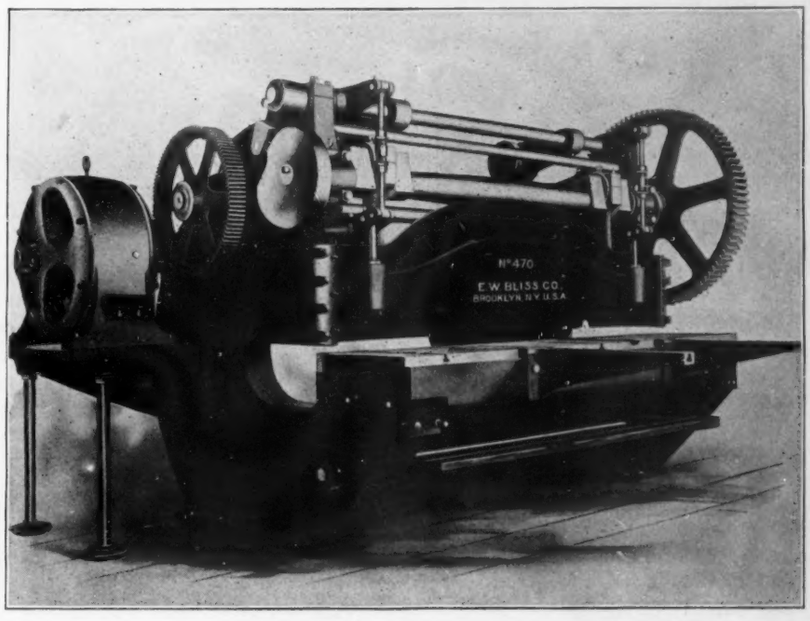
engage the ratchet P, holding the saw clear of the bottom of the cut. When the lever drops, the dogs are disengaged, permitting the saw to be lowered into its cut. An automatic slide Q is connected to the lower end of the clutch lever I. At R are knock-out blocks, provided with screws to take up wear and connected to the slide Q. The latter pulls back a given distance, causing the dogs to be engaged with the ratchet whenever the saw is stopped. The saw frame can, therefore, always be hung at any desired height by increments of 1/32 inch within the entire capacity.

Grade Crossing Work.—The extent to which the steel industry has profited by the policy of leading railway lines to eliminate grade crossings wherever possible is apparent from figures now available in connection with the Pennsylvania system's activities in this direction during the past six years. Since Jan. 1, 1902, the number of grade crossings on the lines of heaviest traffic between New York and Washington and Philadelphia and Pittsburg has been reduced from 994 to 426. Those remaining are scattered over 571 miles of road and are practically all at unfrequented highways. Between Philadelphia and Washington alone more than a hundred grade crossings have been removed.

"BLISS" MOTOR-DRIVEN TRIMMING AND SQUARING SHEAR.

The accompanying illustration shows a large motor-driven shear, built by the E. W. Bliss Co., 8 Adams street, Brooklyn, N. Y., and adapted for trimming and squaring sheet iron and steel in single sheets or packs up to ⅜ inch in thickness and 11 feet 4 inches in length. The blades are each made of a single piece of solid tool steel with two cutting edges and are carefully hardened and ground. There is an 18-inch gap in the housings so that a plate or pack of a greater length than the blades may be trimmed by moving it along and taking successive cuts, the gages being so arranged that the continued cut will be straight and in line with the first, or a plate or pack 36 inches wide may be sheared lengthwise through the middle. An automatic cam-actuated clamping bar directly in front of the upper blade descends in advance of the blade, accurately clamping and holding the pack until the cut is completed. It releases automatically as soon as the cut is made. The clamping device is operated from a cam on the end of the main shaft, which imparts motion to a rock shaft across the top of the machine. The two connections on the rock shaft give motion to the clamping bar by means of two connections arranged with suitable adjusting screws to regulate the pressure on the work. The main shaft is of hammered steel 6½ inches diameter with the two cranks for operating the cutter bar forged and slotted out.

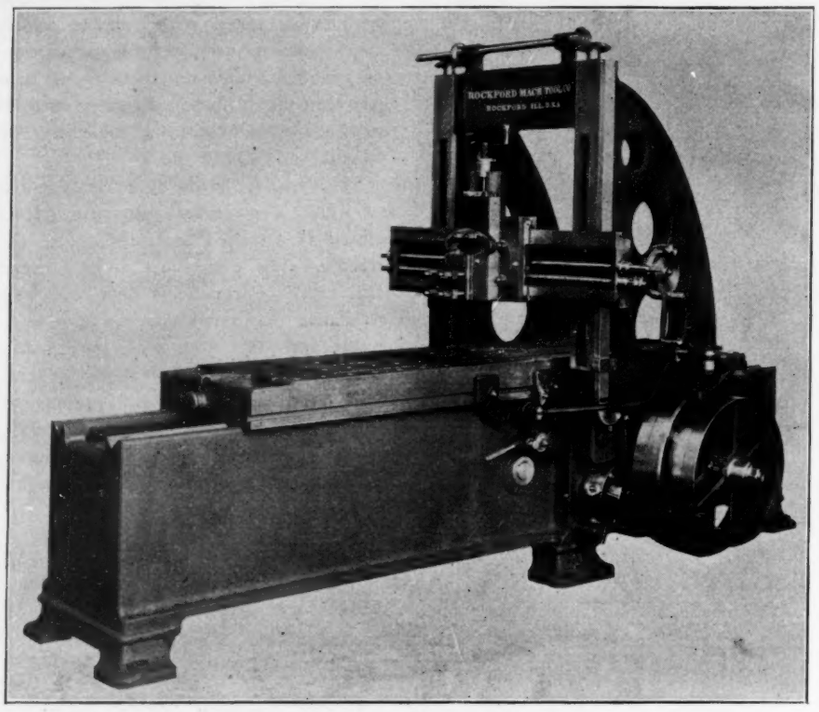
The shear is driven by a five-foot gear to which a powerful automatic friction clutch is attached, operated by a foot treadle. The crankshaft is at a standstill until the treadle is depressed when it makes one revolution performing its work, and then stops with the crank at the highest point. The shear is driven by a 40-horsepower motor running 910 revolutions per minute. The driving shaft on the shear makes 150 revolutions per minute. The ratio of the main shaft gearing is 7½ : 1, giving 20 strokes per minute to the cutter bar. The width between housings is 8 feet 7 inches. The total weight of the machine shown is approximately 38,000 pounds.



BLISS MOTOR-DRIVEN SPLITTING SHEAR.

A NEW PLANER OF HEAVY PATTERN.

The Rockford Machine Tool Co., Rockford, Ill., builder of crank shapers, is just bringing out a line of heavy planers of which the 24 x 24 inch x 6 foot tool shown in the accompanying illustration is the first. The machine is distinctive for its heavy construction in the ways, box frame design, and a general appearance of simplicity. The bed is long, giving ample bearing surface at each end for the platen, promoting accurate machining on long heavy cuts. The return of the platen is at the rate of



NEW ROCKFORD PLANER.

95 feet per minute for a cutting speed of 35 feet per minute. The method of driving is very simple and embodies several features of advantage. The power is transmitted through twin gears consisting of two pinions on the pulley shaft and two intermediate gears operating simultaneously, one on each side of the master gear constituting a very simple drive and providing what amounts to double the wearing and bearing surfaces on the rapid motion gears and pinions. This contributes directly to the long life and power of the planer. All the gears are inside of the bed which affords protection from accident and from damage incidental to dirt, grit or chips accumulating in the gearing and at the same time permits free access to the gears as occasion requires.

The feed friction is of the double releasing type capable of rapid operation without heating and is of strong enough design to give a powerful feed to the tool when taking heavy cuts. The feed range is from 16 inches to 750 inches. Especial care has been taken in the construction and machining of all bearings which are accurately bored, well bushed and provided with efficient self-oiling devices. The planer weighs 7,100 pounds.

Binder for Flue Dust.—The Ramsay-Smith Co., Youngstown, O., has devised a compound to be used as a binder for flue dust, which permits forming the flue dust into molds or briquettes for use in blast furnaces. As one of the several processes for saving flue dust which are being perfected, this method creates a product that has been successfully tested at the furnace of the Youngstown Steel Co. The flue dust is mixed with the compound as one mixes concrete and by means of the ordinary style of mixing machines and is of such a nature as to harden sufficiently within 24 hours to be ready for use. For the test at the Youngstown Steel Co. plant, 469 tons of briquettes were shipped. This converted flue dust was used in the furnace during a period of 15 days, 10 days at the rate of 6¼ per cent and five days at the rate of 12½ per cent. It was substituted in the burden for Mesabi ore, the total amount of Mesabi ore, including the briquetted flue dust, constituting about 80 per cent of the charge during the entire period. The Youngstown Steel Co. reports that very favorable results were obtained and that practically no change in the operation of the furnace was required in the shift from ore to flue dust. The briquettes analyzed about 40 per cent in iron, with a silica content of about 6½ per cent and with a considerable percentage of lime and water in the binder.

RESULTS OF DRY BLAST.

Some results in the manufacture of basic iron with the Gayley dry air blast in the furnace of the E. & G. Brooke Iron Co., Birdsboro, Pa., are announced. The regularity of both silicon and sulphur is notable and in this fact there is contained a suggestion of the advantage through constancy of grade that would obtain with a furnace making foundry iron. The comparison of the silicon and sulphur contents of the iron under the Gayley process with the sulphur content when the furnace was operating with natural air is as follows:

Date.	—Dry air blast— 1907-1908. Silicon.	Sulphur.	Natural air. 1906-1907. Sulphur.
Dec. 27.....	0.65	0.016	0.037
	0.75	0.021	0.030
	0.70	0.019	0.026
	0.35	0.036	0.027
	0.35	0.050	0.025
	0.30	0.046	0.029
Dec. 28.....	0.45	0.033	0.030
	0.55	0.030	0.040
	0.65	0.027	0.036
	0.50	0.018	0.037
	0.50	0.016	0.042
	0.45	0.034	0.026
Dec. 29.....	0.35	0.022	0.035
	0.50	0.024	0.032
	0.65	0.021	0.032
	0.55	0.023	0.028
	0.60	0.021	0.030
	0.35	0.023	0.053
Dec. 30.....	0.50	0.021	0.050
	0.80	0.019	0.048
	0.55	0.027	0.055
	0.60	0.021	0.052
	0.50	0.015	0.037
	0.55	0.024	0.061
Dec. 31.....	0.50	0.019	0.050
	0.45	0.021	0.058
	0.50	0.023	0.053
	0.60	0.021	0.037
	0.50	0.027	0.025
	0.50	0.013	0.035
	0.40	0.024	0.042
	0.35	0.018	0.029
	0.35	0.034	0.046
	0.65	0.017	0.020
	0.80	0.019	0.030
	....	.....	0.025
Jan. 2.....	0.70	0.026	0.033
	0.45	0.033	0.024
	0.50	0.028	0.021
	0.55	0.024	0.027
	0.75	0.018	0.025
	0.50	0.013	0.020
Jan. 3.....	0.40	0.019	0.022
	0.25	0.044	0.022
	0.30	0.028	0.029
	0.45	0.027	0.032
	0.50	0.029	0.026
	0.35	0.030	0.027
General av'ge.	0.51	0.024	0.035

The annual dinner of the Cincinnati Industrial Bureau was held on Wednesday evening, Jan. 22.

ORE SHIPMENTS IN 1907 FROM THE LAKE SUPERIOR DISTRICT

In connection with this issue, the annual table of ore shipments from the mines in the Lake Superior district is published. The chart shows that there was shipped in the period from Jan. 1, 1907, to Dec. 31, 1907, by lake and by rail 42,245,070 gross tons. The all-rail shipment was not so great as in 1906, amounting to 956,315 tons. The lake shipment of 41,288,755 tons is the largest in the history of the Lake Superior region and exceeds the last year shipment, 37,513,589 tons, by nearly 4,000,000 tons. Of the total tonnage moved, 65 per cent was shipped from the Mesabi range; 4 per cent from the Vermilion; 8.6 per cent from the Gogebic; 10.4 per cent from the Marquette; 11.7 per cent from the Menominee and 0.3 per cent from other mines. Of this ore, it is safe to say that, approximately, 60 per cent was of Bessemer grade. The Steel Corporation, through the Oliver Iron Mining Co., shipped an aggregate from the various ranges of 22,710,898 tons, or 56 per cent of the entire output. The other large producers, in the order corresponding to the amount of ore each shipped, were: Corrigan, McKinney & Co., Pickands, Mather & Co., Cleveland-Cliffs Iron Co., Oglebay, Norton & Co., and the Republic Iron & Steel Co., which mined, respectively, 3,020,933 tons, 3,014,980 tons, 2,399,363 tons, 890,097 tons and 774,493 tons. Including ore shipped for interests other than their own, M. A. Hanna & Co. moved 5,014,639 tons.

As compared with previous years, the shipments from the Mesabi range, which dwarf by contrast the output of any of the other ranges, in the 1907 output show a proportional increase. In 1904, the Mesabi mines yielded 12,156,008 tons; in 1905, 20,153,699 tons; in 1906, 23,792,454 tons and during last year 27,492,949 tons. This increase of 4.2 per cent this year over 1906 compares with an increase of 3.1 per cent in 1906, 3 per cent in 1905 and 2.7 per cent in 1904. The mines on the Mesabi range shipping for the first time in 1907 added 591,809 tons and included the Alberta, Canisteo, Diamond, Fowler, Gilbert, Hartley, Holman, Mariska, McKinley, Onandago, Nassau, Spring and Yawkey. Of these, seven are shaft properties, and five, all belonging to the Oliver Iron Mining Co., are open pits. The largest shipper in 1907 was the Hull-Rust pit of the Steel Corporation, which displaced the Mountain Iron record in 1906 with an output of 2,900,493 tons. The other mines shipping more than 1,000,000 tons from Minnesota were the Adams and Fayal at Eveleth, the Burt, Morris, Mahoning and Stevenson at Hibbing, the Virginia and Mountain Iron. In this year's table, all the shipments heretofore credited to the Aetna mine are now included in Mountain Iron, and the output of the old Cloquet mine is now included in the Spruce.

The shipments from the Gogebic range were slightly less than those of 1906, and the largest shipper was again the Norrie group, from which was mined 1,009,085 tons. The Aurora and Pabst mines are now included in the Norrie group, and are so presented in the table. Shipments from the Marquette range were 281,567 tons in excess of the 1906 production, but a decrease of 144,360 tons is shown in the Menominee range shipments. There were no new mines from which ore was shipped on the Gogebic range, but in the Marquette district, the Austin, Empire, Maas and Stevenson, which, with the exception of the Empire, are properties of the Cleveland-Cliffs Iron Co., sent out their first ore. The new mines of the Menominee range were the Chatham, Fogarty, Hollister, James and Kimball and the total number of new shipping mines in the Lake Superior district during the year was 22.

The quantity of ore shipped from the new mines of the Marquette range amounted to 99,098 tons and that from the new mines of the Menominee range 47,787 tons. The shipments from the Helen mine by way of Michipicoten are given below and were 142,832 tons.

SHIPMENTS BY RANGES, GROSS TONS.

	1907.	1906.	1905.	1904.	1903.	1902.
Marquette Range	4,388,073	4,057,187	4,210,522	2,843,703	3,040,245	3,868,025
Menominee Range	4,964,728	5,109,088	4,495,451	3,074,848	3,749,567	4,612,509
Gogebic Range	3,637,907	3,643,514	3,705,207	2,398,287	2,912,912	3 663,484
Vermillion Range	1,685,267	1,792,355	1,677,186	1,282,513	1,676,699	2,084,263
Mesabi Range	27,492,949	23,792,553	20,153,699	12,156,008	12,892,542	12,342,840
Miscellaneous	76,146	128,742	111,391	67,480	17,913	.....
Total	42,245,070	38,523,439	34,353,456	21,822,839	24,289,878	27,571,121

SHIPMENTS BY PORTS AND ALL-RAIL, GROSS TONS.

	1907.	1906.	1905.	1904.	1903.	1902.
Escanaba	5,761,988	5,851,050	5,307,938	3,644,267	4,277,561	5,413,704
Marquette	3,013,826	2,791,033	2,977,828	1,907,301	2,007,346	2,595,010
Ashland	3,437,672	3,388,106	3,485,344	2,288,400	2,823,119	3,553,919
Two Harbors	8,188,906	8,180,125	7,779,850	4,566,542	5,120,656	5,605,185
Gladstone	.....	.....	5,118,385	4,169,990	3,978,579	4,180,568
Superior	7,440,386	6,083,057	.....	553	35,816	92,375
Duluth	13,445,977	11,220,218	8,807,559	4,649,611	5,356,473	5,598,408
Total by lake	41,288,755	37,513,589	33,476,904	21,226,664	23,649,550	27,039,169
Total by rail	956,315	1,009,850	876,552	596,175	640,328	531,952
Total shipments	42,245,070	38,523,439	34,353,456	21,822,839	24,289,878	27,571,121

PRODUCTION BY MINES.

MESABI RANGE.

Adams	1,136,513
Adriatic	70,187
Agnew	149,084
Albany	437,521
Alberta	31,032
Alexander	120,332
Bessemer	78,012
Biwabik	803,750
Brunt	178,935
Burt	1,501,272
Canisteo	5,454
Cass	36,121
Chisholm	258,793
Cincinnati	6,369
Clark	319,983
Commodore	477,203
Corsica	172,226
Crosby	227,265
Croxton	349,853
Cyprus	260,948
Diamond	171
Duluth	93,120
Elba	134,488
Fayal	1,878,812
Forest	4,840
Fowler	34,014
Franklin	30,926
Frantz	907
Genoa	108,610
Gilbert	100,178
Glen	205,426
Hartley	334,646
Hawkins	270,984
Hector (Hale)	65,952
Higgins No. 2	173,439
Hobart	7,339
Holland	16,908
Holman	8,068
Hull	157,366
Hull-Rust	2,900,493
Iroquois	254,329
Jennings	99,812
Jordan	61,996
Kinney	145,989
La Belle	56,146
Larkin (Tesora)	22,040
La Rue	301,522
Laura	149,410
Leetonia	301,368
Leonard	137,316
Lincoln	297,870
McKinley	17,706
Mahoning	1,564,332
Malta	82,065
Mariska	137
Mayas	113,521
Miller	279,453
Minorca	154,661
Mohawk	128,870
Monroe	156,809
Morris	2,076,388
Morrow	34,935
Mtn. Iron (Aetna)	1,973,519
Myers	153,770
Nassau	19,172
Onandaga	521
Pearce	68,886
Pettit	36,074
Pillsbury	489,718
Rust	213,355
Sellers	155,060
Shenango	387,093
Spring	15,257
Spruce	610,457
St. Paul	113,200
Stevenson	1,142,977
Susquehanna	137,207
Tener	190,903
Troy	100,730
Union	61,825
Utica	304,864
Victoria	90,090
Virginia Group	1,015,717
Wacoutah	158,692
Webb	113,334
Williams	35,267
Winnifred	94,867
Yates	210,726
Yawkey	15,453
Total	27,492,949

MENOMINEE RANGE.

Antoine(Clifford)	100,996
Aragon	441,636
Armenia	36,665
Baltic	189,119
Breen	20,366
Bristol	345,676
Calumet	51,646
Caspian	138,867
Crystal Falls	114,158
Chapin	855,308
Chatham	14,883
Dober	90,358
Dunn	141,992
Eleanor (Appleton)	1,677
Fairbanks (Paint River)	75,805
Florence	178,955
Fogarty	7,949
Genessee	38,984
Great Western	234,492
Groveland	13,913
Hemlock	117,181
Hollister	6,371
James	2,360
Kimball	16,224
Lamont(Monitor)	42,090
Lincoln	714
Loretto	99,779
Mansfield	183,532
Michigan	39,819
Millie	18,691
Munro	46,834
Nanaimo	53,778
Penn Iron Mining Co.	381,128
Pewabic	457,796
Saginaw(Perkins)	26,080
Tobin	237,781
Vivian	48,493
Youngs	92,632
Total	4,964,728

GOGEBIC RANGE.

Anvil	39,923
Ashland	298,056
Atlantic	91,759
Brotherton	104,224
Cary (Superior)	209,407
Castile	6,157
Colby	94,480
Eureka	57,904
Germania	19,319
Iron Belt	17,347
Ironton	190,968
Mikado	163,891
Montreal	159,763
Newport	551,873
Norrie Group	1,109,085
Ottawa	46,424
Pike	24,922
Sunday Lake	101,899
Tilden	312,496
Yale	38,010
Total	3,637,907

MARQUETTE RANGE.

American	13,764
Austin	195,950
Beaufort(Ohio)	78,029
Breitung Hem. No. 2	59,667
Cambria	135,145
Champion	107,577
Cleve'd Cliffs Gr'p.	1,030,928
Empire	40,565
Hartford	328,161
Imperial	55,756
Jackson	61,345
Lake Angeline	283,373
Lake Superior	674,066
Lillie	80,545
Maas	32,378
Mary Charlotte	155,633
Negaumee	296,170
Princeton (Sw'nz'y).	177,863
Queen(Blue).	309,917
Republic	170,554
Richmond	35,156
Rolling Mill.	49,204
Stephenson	6,305
Volunteer	10,022
Total	4,338,869

VERMILLION RANGE.

Chandler	245,684
Pioneer	830,700
Savoy	43,320
Sibley	226,835
Soudan(Minnesota)	102,977
Zenith	235,751
Total	1,685,267

MISCELLANEOUS.
(In Wisconsin.)

Iron Ridge	3,966
Illinois	72,180
Total	76,146
Helen	142,832

TOTAL PRODUCTION OF PIG IRON IN THE UNITED STATES IN 1906 AND 1907.

Statistics collected from the Manufacturers by The American Iron and Steel Association, all in Gross Tons.

Production in 1907, 25,781,361 Gross Tons; in 1906, 25,307,191 Tons; in 1905, 22,992,380 Tons; and in 1904, 16,497,033 Tons.

Total Production of All Kinds of Pig Iron.

TOTAL PRODUCTION OF PIG IRON BY STATES.

States.	Blast Furnaces. In blast June 30, 1907.	Dec. 31, 1907. In.	Dec. 31, 1907. Out.	Dec. 31, 1907. Total.	Production. Gross tons of 2,240 pounds. (Includes spiegeleisen and ferro-manganese.) First half of 1907.	Second half of 1907.	Total for 1907.
Massachusetts	2	2	0	2	8,746	10,373	19,119
Connecticut	2	3	0	3			
New York	17	9	17	26	859,125	800,627	1,659,752
New Jersey	8	5	6	11	195,245	177,944	373,189
Pennsylvania	141	70	87	157	5,964,884	5,383,665	11,348,549
Maryland	4	1	4	5	221,145	190,688	411,833
Virginia	16	7	19	26	260.912	217,859	478,771
Georgia	2	1	3	4	26,173	29,652	55,825
Texas	1	0	4	4			
Alabama	34	15	34	49	861,771	824,903	1,686,674
West Virginia	4	0	4	4	151,643	139,423	291,066
Kentucky	5	1	7	8	79,013	48,933	127,946
Tennessee	14	9	12	21	193,371	199,735	393,106
Ohio	58	17	51	68	2,815,174	2,435,513	5,250,687
Illinois	24	11	13	24	1,263,258	1,194,510	2,457,768
Indiana	0	1	0	1	197,330	239,177	436,507
Michigan	12	8	5	13			
Wisconsin	6	2	4	6	160,045	162,038	322,083
Minnesota	1	1	0	1			
Missouri	2	1	1	2			
Colorado	6	3	3	6			
Oregon	0	0	1	1	220,209	248,277	468,486
Washington	0	0	1	1			
California	0	0	0	0			
Total	359	167	276	443	13,478,044	12,303,317	25,781,361

PRODUCTION OF BITUMINOUS COAL AND COKE PIG IRON.

New York	17	9	10	19	859,125	800,627	1,659,752
New Jersey	4	2	3	5	130,392	125,509	255,901
Pennsylvania	101	50	57	107	5,270,883	4,821,111	10,091,994
Maryland	4	1	3	4	221,145	190,688	411,833
Virginia	16	6	16	22	281,092	236,003	517,095
Georgia	1	0	2	2			
Texas	1	0	3	3			
Alabama	31	13	31	44	846,034	805,499	1,651,533
West Virginia	4	0	4	4	151,643	139,423	291,066
Kentucky	4	1	6	7	78,423	47,561	125,984
Tennessee	13	8	10	18	193,016	197,590	390,606
Ohio	58	14	48	62	2,815,174	2,433,088	5,248,262
Illinois	24	11	13	24	1 263,258	1,194,510	2,457,768
Indiana	0	1	0	1	158,299	199,969	358,268
Michigan	2	1	1	2			
Wisconsin	5	1	4	5			
Minnesota	1	1	0	1	245,530	266,818	512,348
Missouri	1	0	1	1			
Colorado	6	3	3	6			
Total	293	122	215	337	12,514,014	11,458,396	23,972,410

ANTHRACITE AND MIXED ANTHRACITE AND COKE PIG IRON.

New York	0	0	5	5	64,853	52,435	117,288
New Jersey	4	3	3	6			
Pennsylvania	37	20	25	45	693,381	560,885	1,254,266
Total	41	23	33	56	758,234	613,320	1,371,554

PRODUCTION OF CHARCOAL PIG IRON BY STATES.

Massachusetts	2	2	0	2	8,746	10,373	19,119
Connecticut	2	3	0	3			
New York	0	0	2	2	620	1,669	2,289
Pennsylvania	3	0	5	5			
Maryland	0	0	1	1	517	927	1,444
Virginia	0	1	3	4			
Alabama	3	2	3	5	15,737	19,404	35,141
Georgia	1	1	1	2	6,421	14,098	20,519
Texas	0	0	1	1			
Kentucky	1	0	1	1			
Tennessee	1	1	2	3			
Ohio	0	3	3	6	0	2,425	2,425
Michigan	10	7	4	11	143,860	151,062	294,922
Wisconsin	1	1	0	1	29,895	31,643	61,538
Missouri	1	1	0	1			
Oregon	0	0	1	1			
Washington	0	0	1	1			
California*	0	0	0	0			
Total	25	22	28	50	205,796	231,601	437,397

*Produced a small quantity of pig iron with charcoal and electricity

TOTAL PRODUCTION OF PIG IRON ACCORDING TO FUEL USED.

Bituminous	293	122	215	337	12,514,014	11,458,396	23,972,410
Anth. & anth. & coke	41	23	33	56	758,234	613,320	1,371,554
Charcoal	25	22	28	50	205,796	231,601	437,397
Total	359	167	276	443	13,478,044	12,303,317	25,781,361

Miscellaneous Pig Iron Statistics.

PRODUCTION OF PIG IRON IN PENNSYLVANIA AND OHIO.

	Districts.	Blast Furnaces. In blast June 30, 1907.	Dec. 31, 1907. In.	Dec. 31, 1907. Out.	Dec. 31, 1907. Total.	Production. Gross tons of 2,240 pounds. (Includes spiegeleisen and ferro-manganese.) First half of 1907.	Second half of 1907.	Total for 1907.
Pennsylvania.	Lehigh Valley	21	15	12	27	370,941	380,287	751,228
	Schuylkill "	16	7	8	15	408,178	346,053	754,231
	L. Susq. "	14	4	15	19	342,741	288,438	631,179
	Juniata "	7	5	5	10	115,293	140,109	255,402
	Allegheny Co.	42	24	20	44	2,851,098	2,587,135	5,438,233
	Shenan. Valley	21	7	13	20	1,054,302	894,173	1,948,475
	Miscel. bitum.	17	8	9	17	821,711	745,801	1,567,512
	Charcoal	3	0	5	5	620	1,669	2,289
Ohio.	Mahoning Val.	18	6	12	18	1,097,426	888,801	1,986,227
	Hocking "	1	0	1	1	812,166	742,116	1,554,282
	Lake Counties	13	2	12	14			
	Miscel. bitum.	15	2	14	16	720,085	630,475	1,350,560
	H. R. bitum.	11	4	9	13	185,497	171,696	357,193
	H. R. charcoal	0	3	3	6	0	2,425	2,425

PRODUCTION OF BESSEMER AND LOW-PHOSPHORUS PIG IRON.

New York	467,143	462,376	929,519
Pennsylvania	3,135,603	2,600,698	5,736,301
Maryland and Virginia	220,089	200,969	421,958
West Virginia, Tennessee, and Kentucky	170,826	153,497	324,323
Ohio	2,045,577	1,665,424	3,711,001
Illinois	916,089	866,651	1,782,740
Michigan, Wisconsin, and Minnesota	76,505	26,734	103,239
Colorado and California	153,146	69,393	222,539
Total	7,185,878	6,045,742	13,231,620

PRODUCTION OF BESSEMER AND LOW-PHOSPHORUS PIG IRON IN PENNSYLVANIA AND OHIO BY DISTRICTS.

Pennsylvania.	Lehigh Valley	64,788	79,694	144,482
	Schuylkill Valley			
	Lower Susquehanna Valley	254,443	160,316	414,759
	Allegheny County	876,784	1,566,957	3,443,741
	Shenango Valley	638,495	551,774	1,190,269
	Miscellaneous bituminous	301,093	241,957	543,050
Ohio.	Mahoning Valley	889,668	680,018	1,569,686
	Lake Counties	602,064	534,851	1,136,915
	Hanging Rock bituminous	55,712	32,690	88,402
	Miscellaneous bituminous	498,133	417,865	915,998

PRODUCTION OF BASIC PIG IRON, NOT INCLUDING CHARCOAL IRON.

New York and New Jersey	114,438	100,759	215,197
Pennsylvania—Allegheny County	881,274	930,733	1,812,007
Other counties	943,939	828,462	1,772,401
Virginia and Alabama	250,590	291,666	542,256
Ohio, Indiana, Illinois, Missouri, and Col.	480,895	552,463	1,033,358
Total	2,671,136	2,704,083	5,375,219

PRODUCTION OF SPIEGELEISEN AND FERRO-MANGANESE.

Pennsylvania	121,813	129,934	251,747
New Jersey, Maryland, Ill., and Colorado	50,862	36,739	87,601
Total	172,675	166,673	339,348

PRODUCTION OF ALL KINDS OF PIG IRON FROM 1903 TO 1907.

States.	Production—Gross tons of 2,240 pounds. 1903.	1904.	1905.	1906.	1907.
Massachusetts	3,265	3,149	15,987	20,239	19,119
Connecticut	14,501	8,922			
New York	552,917	605,709	1,198,068	1,552,659	1,659,752
New Jersey	211,667	262,294	311,039	379,390	373,189
Pennsylvania	8,211,500	7,644,321	10,579,127	11,247,869	11,348,549
Maryland	324,570	293,441	332,096	386,709	411,833
Virginia	544,034	310,526	510,210	483,525	478,771
North Carolina					
Georgia	87,255	75,686	38,699	92,599	55,825
Texas					
Alabama	1,561,398	1,453,513	1,604,062	1,674,848	1,686,674
West Virginia	199,013	270,945	298,179	304,534	291,066
Kentucky	102,441	37,106	63,735	98,127	127,946
Tennessee	418,368	302,096	372,692	426,874	393,106
Ohio	3,287,434	2,977,929	4,586,110	5,327,133	5,250,687
Illinois	1,692,375	1,655,991	2,034,483	2,156,866	2,457,768
Indiana	244,709	233,225	288,704	369,456	436,507
Michigan					
Wisconsin	283,516	210,404	351,415	373,323	322,083
Minnesota					
Missouri					
Colorado	270,289	151,776	407,774	413,040	468,486
Washington					
California					
Total	18,009,252	16,497,033	22,992,380	25,307,191	25,781,361

BUILDING STRIKES

Are Frequent in San Francisco—Work Less Active.

(Special Correspondence.)

San Francisco, Feb. 1.—Strikes continue to inflict injury upon this city, and have probably wrought more disaster and loss than all other ills from which this city has been suffering. Strikes on buildings are of daily occurrence, though only when work is interrupted on very large and conspicuous structures, do these strikes attract attention. The small ones go unnoticed. The Mills building was tied up for a few days, because some agitator called all the men out owing to a jurisdiction dispute betwen two unions. The men returned to work, though the dispute remains unsettled. Work was delayed on the Pacific building, said to be one of the finest structures in the whole country, owing to a jurisdiction dispute which the councils were unable to settle. and now it is the Phelan building, at Market, O'Farrell streets and Grant avenue, the most conspicuous spot on the peninsula. Some business agent ordered all the men working on the building to quit work, on the ground that some laborers employed on the building worked for $2.25 a day, when the minimum rate is $2.50. A few laborers, recent importations from Greece, unable to speak or understand a word of English, worked for $2.25 a day, while all the other laborers were paid from $2.50 to $3 a day, according to the work they did. When the walking delegate ordered the men to strike every man employed on that building had to obey, and the building was tied up until the walking delegate could be prevailed upon to permit the men to resume until the difference could be adjusted. In the Phelan case it was a cessation of work of a few hours only; in the Mills case it was one week. Whether the strike lasts hours, days, or weeks, they cause loss, annoyance and vexation to the owners, contractors and wage earners. Many contractors pay tribute to the business agents, to escape annoyance. In several instances strikes have been called because a labor leader had a personal spite against an owner or contractor. Construction work in the country is slack during the winter, causing several thousand unskilled laborers to come to the city. Those men, mostly recent arrivals from Europe, are willing to work for from $2.25 to $3 a day, while in town, and contractors are apt to take advantage of the cheaper wage rate during the few weeks, but the unions object, although the men are not affiliated, and know nothing of unions.

STRIKE BROKEN

Among Milwaukee Molders, Say Metal Trade Speakers.

Milwaukee, Wis., Feb. 4.—At the annual meeting and banquet of the Milwaukee Metal Trades Association and the Milwaukee Founders' Association in the Hotel Pfister, Jan. 30, the retiring president, Gen. Otto H. Falk, announced that the strike of the molders in Milwaukee is over.

"Although the practice of picketing exists, it is without result," said the general. "The molders' union in Milwaukee is broken."

S. L. G. KNOX.

Some weeks ago the Stowell Mfg. Co. of South Milwaukee announced that 60 employes who had gone on strike had applied for reinstatement. The molders' union, however, declares that the strike is still on.

The feeling at the meeting seemed to be that business gave promise of speedy improvement, and that along conservative lines the association should apply itself to the improvement of both wages and trade conditions.

The principal speakers were Prof. E. A. Ross, of the University of Wisconsin, who spoke on "The Imminent Future of America;" K. K. Kennan, who spoke of "The New Immigration," and Harry Soady, whose recital of "As Our Foreign Friends See Us," created a great deal of laughter.

Mr. Kennan dwelt at length upon the fact that the immigration of today is principally from southeastern European countries, the people being ignorant, inclined to congregate in the slums, and not readily adaptable to new conditions. The Italians, especially, had in many cases no intention of making a permanent residence here, their ambition being to accumulate a few thousands with which to return and become landlords in their own country. He favored more stringent immigration laws.

At the election of officers, S. L. G. Knox, vice president of the Bucyrus Co. of South Milwaukee was made president; Geo. Forgeot, manager of the Allis-Chalmers Co., vice president; Hugo Froelich, treasurer, and W. J. Fairbairn, secretary. Gen. Falk and E. J. Kearney were made directors for three years. Mr. Knox, the new president, is one of the younger figures in Milwaukee iron manufacturing circles, but his work in various directions, especially for the introduction of the Bucyrus steam shovel upon the Panama canal, has attracted national attention.

Makes Quick Shipment.—The Buffalo Forge Co., Buffalo, N. Y., has just established a notable record for expedition in the shipment of one of its electric blowers with motor attached. An inquiry received from a Cleveland house required that the motor be of special speed and should be shipped in five working days. Allowing for express shipment from the works of the motor builders, the Buffalo Forge Co. promised shipment of the order in 10 days after receipt. The order was received Jan. 11; the motor was ordered the same day by wire, and it was received by express Jan. 16. In the meantime, patterns had to be changed and castings made for the special sub-base to accommodate the motor. This work also involved changes in the drawings. With everything in readiness the work of assembling was done Friday, and the shipment made Saturday, Jan. 16, several hours less than a week after the order was placed. The blower has a capacity of 6,500 cubic feet of air per minute, at a pressure of six ounces per square inch, when operated at a normal speed of 1,130 revolutions per minute.

The Ideal Mfg. Co., Portsmouth, O., has elected officers and directors as follows: Chris Heer, president and general manager; W. P. Fee, vice president; Harry W. Miller, secretary and treasurer; Geo. D. Selby, Geo. M. Appel, Henry W. Heer and W. W. Miller, of Pittsburg.

BEST YEAR'S REPORT

Made by Warwick Iron & Steel Co. for 1907—Dry Air Results.

The annual report of the Warwick Iron & Steel Co., Pottstown, Pa., for the fiscal year ending Dec. 31 last, shows that the company had the best year in its history. The total production was 256,750 tons, as against 219,781 tons for 1906. The net earnings were $432,528, as against $293,243 the previous year and $147,672 in 1905. President Edgar S. Cook in his report says in part as follows:

The unfilled contracts constitute valuable assets. While shipments have been postponed in consequence of the enforced idleness and greatly reduced consumption of steel mills and foundries, yet we feel assured that the tonnage represented by our orders will ultimately be taken by the purchasers without the necessity of resorting to extreme measures to enforce the deliveries. No contracts have been cancelled, nor will any be cancelled, except for insolvency on the part of the buyer, or other sufficient cause. The Warwick company is strong in this position, as it filled many contracts during the early part of 1907 at prices below the cost of production, and now that conditions are reversed, a consistent policy will be enforced.

The lease of No. 3 furnace and its operation throughout the year proved profitable. The cost of repairs to this furnace has been charged to profit and loss account, viz., $62,872.86.

Profit and loss account has also been charged with an expenditure of $11,310.32 for rebuilding of trestles with concrete piers and steel superstructures to replace timber. The increase in weight of cars and locomotives rendered these expenditures necessary.

Real estate, plant and equipment account has been increased by $12,943.73, representing additions to equipment.

The labor conditions in 1907 and the lack of tenant houses in Pottstown brought about the necessity of supplying houses for a portion of our employes. This represents a net expenditure of $13,693.83.

Mortgage bonds to the amount of $15,000 were paid and cancelled June 1, 1907, thus reducing the outstanding bonds issue to $225,000.

Semi-annual dividends of 3 per cent each, amounting to a total of $88,897.20, were paid May 15 and Nov. 15, respectively.

Dry Blast Beneficial.

Up to Jan. 1, 1907, the total payments on account of the Gayley dry air plant amount to $170,566.33. It was not until the middle of August that the machinery was sufficiently completed to test. The first two weeks were practically devoted to testing the engines, etc. The air supplied to No. 2 furnace was deprived of a large percentage of its moisture commencing with September. It is due to the assistance obtained from the dry air plant that the management was able to keep No. 2 furnace in operation for a longer period than would have been possible without it. The ability to keep No. 2 furnace running from September to December enabled us not only to prevent the cancellation of basic iron orders, but at the same time to make net gains far in excess of any previous four months in the history of the company.

The net earnings for the last four months of 1907 represent a large percentage of the total cost of the dry air plant. Dry air was applied to No. 1 furnace for five weeks, with beneficial results.

No. 1 furnace has been relined and is ready to be put into operation on short notice whenever trade conditions will permit.

When No. 2 furnace was blown out the brick work naturally was found to be in bad condition, owing to its prolonged blast. Repairs cannot be completed before April next. It is believed that the credit to relining account will be ample for repairs to both furnaces.

AMONG THE INDUSTRIES OF INDIANA.

(Special Correspondence.)

Indianapolis, Ind., Feb. 3.—J. C. Clements and F. K. Lane, of the United States Interstate Commerce Commission, have been holding sessions in this city for the last week hearing evidence on complaints of unjust freight rates, filed by the Indianapolis freight bureau against several railroads. Among the witnesses was J. L. Ketcham of the Brown-Ketcham Iron Works, who testified that unusually keen competition is necessary because of discrimination of rates in favor of other cities.

Charles St. Clair and James Schumaker, of this city, interested in the Automatic Air Brake Co., have closed an option on an abandoned plate glass plant at Elwood and when improvements are made expect to put 125 men to work manufacturing an improved automatic brake.

It is stated that the turnbuckle plant of the Republic Iron & Steel Co. at Muncie has put 100 more men to work, making a total of 300 men now employed.

With a decided improvement in the financial situation during the last week, the industrial situation begins to look much brighter. During the last week local banks have been quietly resuming cash payments. Clearing house certificates have been ordered retired and the securities deposited with a loan committee by the various banking institutions will be returned. The Indianapolis stock exchange, which has been closed since October, resumed public sessions Feb. 3, although secret sessions have been held for the last two weeks. Local securities, with one or two exceptions, are said to be quite as active as they were before the financial trouble.

The Noelke-Richards Iron Works of this city has been awarded the contract for the steel and ornamental iron work to be used in the new Audobon hotel, New Orleans. The contract will amount to about $250,000 and will insure full time at the plant until some time in July.

A new local corporation is the American National Electric Co., just incorporated with $50,000 capital. It is the purpose of the company to do a general electrical and mechanical engineering business including the construction of railroads and light plants. C. N. Wilson is president and C. N. Van Cleve secretary.

An issue of $15,000 preferred stock has been made by the Insley Iron Works of this city. This increases the company's capital from $25,000 to $40,000.

There promises to be a lively contest in the election of directors of the Commercial Club, which will take place early in February.

ANTI-ACCIDENT SOCIETY NOW AT WORK.

The American Anti-Accident Association, which originated in Sharpsville, Pa., is now a fact, a complete organization having been effected. The leading workers of the organization who do the practical work of the organization are on what is called the committee of reference. They note and report all conditions dangerous to public safety and after due investigation the executive board seek to remedy the same. The following is a list of the names and their respective duties: A. L. Bartlette, public assemblies; James Byerly, street traffic; George D. Devitt, information on causes for accidents; Rev. A. H. Heltman, church and religious interests; Charles Hites, excavations and underground work; George Mahany, athletics and sports; Andrew Nickle, current accidents and statistics; Mrs. J. J. Pierce, educational work; Jonas J. Pierce, private and public construction; Scott Robinson, manufacturing industries; James Rickert, steam and electric transportation; Mrs. M. J. Thompson, domestic conditions, and E. J. Turner, J. P., legislation, old and new.

Descriptive matter relating to the organization will soon be issued together with the constitution and by-laws, which will be sent to any who might be interested in the work. Corresponding or associate members are received from any section of the country, so that anyone interested in the movement may become affiliated with it.

In the organization of the first society the following officers were chosen: President, Thomas D. West; vice president, Samuel Dunham; secretary, Rev. C. J. Harris; treasurer, Frank Pierce. The names of 40 employers, employes, merchants, etc., were entered as members.

THOROUGH TESTS

Being Made of Canadian Coals—Tin Plate Plant Damaged.

(Special Correspondence.)

Toronto, Feb. 2.—The Canadian geological survey has undertaken an investigation of the coals of Canada, the results of which are likely to have much practical interest for iron and steel manufacturers. Sample lots of coal are being obtained from every important seam in each district and subjected to an exhaustive series of economic and chemical tests, including washing and, when necessary, dry cleaning, followed by boiler tests. Other portions will be tested in gas producers, measuring the power developed, and competitive coking tests will also be made. The co-operation of the mining and mechanical engineering departments of McGill University, Montreal, has been obtained, securing the use of the well-equipped laboratories of that institution. Dr. J. B. Porter, McGill professor of mining engineering, has the general direction of the investigation, and Prof. R. J. Durley is in charge of the boiler and gas producer tests. The economic tests are carried out on a scale of approximately 50 horsepower and for periods not less than one day. So far samples aggregating 175 tons have been secured from the mines of Nova Scotia and New Brunswick, and it is expected to cover the mines of the Canadian west this season.

The Montreal Locomotive Works, Ltd., of Montreal, the Canadian branch of the American Locomotive Co., is greatly increasing its manufacturing capacity to meet the increased demand for locomotives. The works have already a capacity for 250 locomotives a year, and on the completion of the new erecting shop, which is expected in March, and the rearrangement of other departments, the annual capacity will be increased to 300 locomotives.

A winding-up order against the Manson Mfg. Co., of Thorald, Ont., has been granted. The company has liabilities amounting to $37,000 and the assets are less than $20,000. It was organized in 1906 with a nominal capital of $100,000, of which $53,000 is paid-up, and was engaged in the manufacture of engines. N. L. Martin was appointed interim liquidator.

The monthly report of the Canadian department of trade and commerce for October shows total imports of iron and steel manufactures during that month of the value of $5,704,827, as against $5,096,834 for October, 1906. Imports from the United States were $4,116,707, as against $3,598,931. American machines and machinery were imported to the value of $1,304,612, as against $933,208 in October, 1906, and the imports of steel rails from the United States were $214,294, as compared with $15,023.

The Canada Tin Plate & Sheet Steel Co.'s plant at Morrisburg, Ont., which only began operations in December, was partially destroyed by fire on Jan. 27. About one-half of the 800-foot building was consumed, including the pickling, lining, galvanizing and shipping rooms and the general offices. The expensive machinery is uninjured. The fire originated from oil in one of the tinning vats taking fire. The loss is understood to be covered by insurance and preparations are being made to rebuild.

Mixed Shipments Allowed.—The California railroads have just made a ruling of great interest to jobbers and small consumers of plates, shapes and bars on the Pacific coast. This ruling permits of mixed shipments of bars, plates and structural steel at one rate for carload lots. The rule heretofore has applied to all parts of the country except California, where mixed shipments of this nature were not permitted, largely because big jobbers have exerted sufficient influence with the railroads to prevent smaller competitors taking advantage of carload rates on less than carloads of one classification of shipment.

To Discuss Gas Power.—The first meeting of the gas power section of the American Society of Mechanical Engineers will be held Tuesday evening, Feb. 11, in the Engineering Societies building, at 29 West Thirty-ninth street, New York. The subjects under discussion will be "Experimental Gas Turbines in France," with lantern slides; "A Simple Continuous Gas Calorimeter;" "A Gas Engine and Producer Guarantee." Other subjects relating to the question of gas power will also be discussed.

File Final Accounting.—A final accounting has been filed with the court at Lancaster, Pa., by the receivers of the Susquehanna Iron & Steel Co. During the receivership receipts have aggregated $6,564,712.80 and disbursements $6,541,618.79, leaving a balance of $23,094.01, with about $100,000 yet to be collected. Creditors of the old company, it is estimated, will receive about 40 per cent, but there will be nothing for stockholders. The properties have all been acquired by purchase by a new corporation, the Susquehanna Iron Co., by which they are now being operated.

WILL BULID AN ADDITIONAL BRICK PLANT.

To meet the constantly increasing demand for its product, the Queen's Run Fire Brick Co., Lock Haven, Pa., has increased its capital stock from $250,000 to $375,000 for the purpose of building a new plant at Queen's Run, Pa. The company's present plant at Lock Haven has a capacity of 50,000 hand made brick per day. It is a modern plant having been entirely rebuilt four years ago. The new plant at Queen's Run will be of about the same capacity.

Queen's Run is three miles west of Lock Haven on the Pennsylvania railroad. Here the company owns a property consisting of about 5,000 acres bordering for three miles the north bank of the west branch of the Susquehanna river. For more than 50 years, this territory has been yielding an exceptionally fine quality of high grade fire clay and with these splendid deposits, the company is in an advantageous position for manufacturing a product of superior class. During the past four or five years, the company has extensively and scientifically developed its fire clay deposits so that they are absolutely assured of a supply of both hard and soft clay sufficient for all its requirements for many years to come.

The main building of the new Queen's Run plant will be 100 x 300 feet, with a machine room extension, a separate building for the power plant, 16 twin kilns, a storage shed, 60 x 300 feet with railroad siding on each side. All the buildings, except the storage shed, will be of steel construction and fire proof. Plans and specifications are now being prepared. Forty new and substantial houses will be built, homes for employes, also a large boarding house. It is expected that the plans will be completed and contracts let so that building operations may be begun April 1. About 200 men will be employed.

The equipment of the power plant will consist of two 6 x 16 feet horizontal tubular boilers, a 200-horsepower engine, a 40-horsepower engine, and 500 light dynamos, feed water heaters, etc. This outfit will not be included in the regular contract and the company is now in the market for the equipment.

Installed Mills.—The Morgan Construction Co., Worcester, Mass., engineers and manufacturers, in 1907 installed three continuous rolling mills of its design and manufacture. These were two billet mills for the Indiana Steel Co., Gary, Ind., and a rod mill for the Alpine Montan Gesellschaft. Up to Sept. 22, 1907, the company had completed 49 continuous rolling mills.

Bond Buying Overtops Stocks.

Events which ordinarily would have given a distinct shock to the market, during the past week, made little impression upon securities. The closing of the doors of four banks in New York city, the particularly aggressive tone of the president's special message to congress, the report of the earnings of the Steel Corporation for the last quarter; all these matters served to impress prices only temporarily. Whatever trading was done appeared to be for the most part professional. Gains and losses in almost all cases were fractional, the spread between high and low for the week not being very wide. United States Steel common closed with a loss of one-eighth of a point and the preferred advanced one point. One distinguishing feature of the market was the undeniable trend of purchasers to highest grade bond investments. This was apparent not alone in New York, but also abroad. The total number of shares dealt in for the week was over a million less than that for last week, while the sales of bonds increased over $38,000,000 over those of the preceding week. This was noticeable in the foreign markets as well. British consols are 1¼ points above last Saturday, French rentes are up a point and Japanese and Russian 4 per cents have risen 2 points each. This goes to show that on Europe's markets, as on our own, the investor is basing his judgment of today on safety rather than speculative profits. While earlier in the week it had been thought the Bank of England rate would be reduced to 3½ per cent on Thursday, yet it is now believed that the present rate of 4 per cent will be maintained. The impression appears to be that the New York bank failures will retard the expected gold export for a few weeks, but that it must come about seems only a question of time, in any case before the end of March. The financial strain in Berlin is still considerable and Germany is anxious to secure gold wherever possible. The statement of the New York associated banks for the week was utterly confused by the elimination of the figures of the four suspended banks. These institutions had loans of $18,000,000, so that the decrease reported of $1,783,600 would apparently mean that the total contraction was close to $20,000,000, if the averages of the four banks have been eliminated entirely. In the same way the cash gain of $6,295,000 reported must have reflected an actual increase of nearly $8,000,000 since the suspended banks had $1,400,000 cash. The deposits of these banks footed up $23,000,000, and the gain shown in Saturday's statement was $11,333,500. The sales of shares on the New York stock exchange aggregated 2,816,400, as against 3,847,200 shares last week and 6,277,200 for the corresponding week last year. Sales of bonds exclusive of government bonds amounted to $24,857,000, as compared with $15,777,000 last week and $9,675,000 for the corresponding week last year.

THE LEADING INDUSTRIAL SECURITIES.

	Clos'ng Quo Feb. 1	Changes in Week	Date 1908 Ann. M't'g	Stock Outstanding	Dividend Basis	Dividend Last Declared	Dividend Date Last Div. Pay.
Allis-Chalmers	6	− ⅛	Sept. 3	19,820,000			
Allis-Chalmers pr	19	−1¼		16,150,000	7 cum	1¾ Q.	Feb., 1904
American Can	4¾	− ⅛	Feb. 3	41,233,300			
Am. Can pr	49¾	− ⅛		41,233,300	7 cum	1¾ Q.	Oct., 1907
Am. Car and Fdy	2½	− ½	June 25	30,000,000		1 Q.	Oct.,1907
Am. Car and Fdy pr	89	+ ½		30,000,000	7 n. c.	1¾ Q.	Oct., 1907
American Loc	36¾	+ ½	Oct. 20	25,000,000	5	1¼ Q.	Nov. 1907
American Loc. pr	90½	+ ½		25,000,000	7 cum	1¾ Q.	Oct.,1907
American Ship	50	+2	Oct. 14	7,600,000	4	1	Dec., 1907
American Ship pr	95	+3¾		7,900,000	7 n. c.	1¾ Q.	Oct., 1907
Am. Steel Foundries	6⅛	− ¼	Oct. 6	15,810,000			
Am. Steel Foundries pr.	30	−1		17,240,000	6 cum	2½	Aug., 1904
Barney & Smith	65	.....	June 2	2,000,000	4	1 Q.	Sept.,1907
Barney & Smith pr	128½	.....		2,500,000	8 cum	2 Q.	Sept.,1907
Bethlehem Steel	14	.....	April 7	14,862,000			
Bethlehem Steel pr	38½	−1½		14,908,000	7 n. c.	¾ Q.	Feb., 1907
Cambria Steel	27	− ½	March 17	45,000,000*	6	1½ S. A.	Aug.,1907
Cambria Iron	43	−1		8,468,000*	4	2 S. A.	Apr.,1907
Chicago Pneumatic Tool	26	.....	Feb. 17	6,145,800	4	1 Q.	Oct., 1907
Colorado Fuel	19¼	− ¼	Oct. 19	34,235,500		3¾	Apr.,1908
Crucible Steel	5⅜	− ⅛	Oct. 2	24,578,400			
Crucible Steel pr	37	−1⅜		24,436,500	7 cum	1 Q	Dec., 1907
Empire Steel	5	.....	Feb. 26	2,281,400			
Empire Steel pr	53	.....		2,500,000	6 cum	3 S. A.	July, 1906
Fay & Egan	140	.....	Feb. 18	1,000,000	6	1½ Q.	July, 1907
Fay & Egan pr	130	+1½		1,000,000	7 cum	1¾ Q.	Aug., 1907
General Electric	119	−1	May 12	65,167,400	8	2 Q.	Oct.,1907
Harbison-Walker	13	−1½	Jan. 20	18,000,000		½	Oct.,1907
Harbison-Walker pr	69½	.....		9,600,000	6 cum	1½ Q.	Oct.,1907
International Pump	18	− ⅝	June 2	17,787,300		1	Apr.,1905
International Pump pr	68¼	+ ¼		13,835,000	6 cum	1½ Q.	Nov.,1907
Lackawanna Steel	27	+2	March 11	34,971,400			
Lake Sup. Corp	4⅛	− ⅛	Oct. 7	40,000,000			
New York Air Brake	62	+4	June 16	8,012,500	8	2 Q.	Oct., 1907
Niles-Bement-Pond	130	.....	Feb. 5	8,500,000	6	1½ Q.	Dec., 1907
Niles-Bement-Pond pr	120	+15		2,000,000	6 cum	1½ Q.	Aug.,1907
Otis Elevator Co	25	−5	March 16	6,156,600		1¼ S. A.	Oct., 1907
Otis Elevator Co. pr	77	- 18		6,449,500	6 n. c.	1½ Q.	Oct., 1907
Penn. Steel	60	+2	May 11	10,750,000			
Penn. Steel pr	91	+22		16,500,000	7 n. c.	3½ S. A.	Nov., 1907
Pittsburg Coal Co	9	+ ⅛	Feb. 10	28,297,600			Nov., 1906
Pittsburg Coal pr	40⅛	+ ⅛		27,246,800	7 c.	3½	Apr., 1905
Pressed Stl. Car	20⅞	+ ⅛	Feb. 19	12,500,000		3	Aug., 1904
Pressed Stl. Car pr	78	−1		12,500,000	7 n. c.	1¾ Q.	Nov., 1907
Pullman	154	.....	Nov. 11	100,000,000	8	2 Q.	Nov., 1907
Railway Stl. Spring	25⅛	−1¼	March 5	13,500,000	4	2 S. A.	Oct., 1907
Railway Stl. Spring pr	75	−5		13,500,000	7 cum	1¾ Q.	Dec., 1907
Rep. Iron & Steel	17	+ ¼	Oct. 21	27,191,000			
Rep. Iron & Steel pr	68	−1		20,416,900	7 cum	1¾ Q.	Oct., 1907
Sloss-Sheffield	39½	− ½	March 11	10,000,000	5	1¼ Q.	Dec., 1907
Sloss-Sheffield pr	92	+2		6,700,000	7 n. c.	1¾ Q.	Oct., 1907
U. S. Pipe & Fdy	19⅜	− ⅜	June 24	12,500,000	4	1 Q.	Dec., 1907
U. S. Pipe & Fdy. pr	67	+ ¼		12,500,000	7 n. c.	1¾ Q.	Dec., 1907
U. S. Steel	28	− ⅛	April 20	508,302,500	2 n. c.	½ Q.	Dec., 1907
U. S. Steel pr	92¼	+1		360,281,100	7 cum	1¾ Q.	Nov., 1907
U. S. Steel 5's	88⅝	+ ¼		463,798 000	5	5 A.	
Va. Iron, Coal & Coke	49	−1	Nov. 17	9,073,680			
Westinghouse Elec	43⅝	−1⅜	June 24	24 998,700*	10	2½ Q.	Oct., 1907
Westinghouse Air Brake	114	−19	Oct. 6	11,000,000*		5 Q.	Oct., 1907

Par value of shares, $100, except those starred (*), $50.

Copper Stocks.

Boston.— Butte Coalition, closed 18¾, a net loss of ¼; Calumet & Arizona, closed 112, a net gain of 1; Calumet & Hecla Mining, closed 665, a net gain of 20; North Butte Mining, closed 49, a net loss of ½; Quincy Mining, closed 88, a net gain of 3.

New York.—Amalgamated Copper, closed 50⅞, a net gain of 1⅜.

Financial Notes.

Recent dividend declarations include the following: American Radiator Co., an extra dividend of 2 per cent on common in addition to regular quarterly dividends on the preferred and common stocks of, respectively, 1¾ and 1 per cent. The preferred dividend is payable Feb. 15. The regular and extra common dividends are payable Mar. 31; the Buckeye Steel Castings Co., Columbus, O., regular quarterly dividend of 1½ per cent on preferred and 1 per cent on common, with an additional 2½ per cent, making 6½ per cent on common for the year; the J. G. Brill Co., regular quarterly dividend of 1¾ per cent on its preferred stock, payable Feb. 1. The regular quarterly dividend of 1 per cent on its common stock, payable Mar. 14, was also declared.

NEWS FROM MANY INDUSTRIES

New Buyers:—

F. J. Grosnick and Joseph A. Michels have organized the Escanaba Steam Boiler & Sheet Iron Works, Escanaba, Mich.

The Irondale Steel Co., Seattle, Wash., has been incorporated with a capital of $1,000,000 by J. A. Moore, S. G. Murray, M. M. Lyter, H. D. Folsom Jr., and William Price.

The Sikeston Machine Works, Sikeston, Mo., has been chartered with a capital of $4,000. Those interested in the new enterprise are: Henry Kohms, E. A. Cart, Clarence Cart and Adam Roush.

The Perfection Road Machinery Co., Galion, O., has been incorporated with a capital stock of $200,000. The incorporators are: C. D. Morgan, John Erb, D. C. Boyd, E. R. Wister and Joseph King.

Articles of incorporation have been filed by the Novelty Machine Co., New York, N. Y., with a capital of $50,000. Those interested are John W. Ely, 2 Rector street, Thomas E. McLeod, Flat Iron building, and Morris V. McDonald, 134 Broadway, all of New York.

Thomas Burkhard, Inc., Brooklyn, N. Y., to manufacture and deal in copper, brass, iron, etc., has been incorporated by Thomas Burkhard, Eleonora M. Burkhard, William J. Burkhard, 145 Monroe street, and Thomas Burkhard Jr., 192 Monroe street, all of Brooklyn. The capital stock of the new company is $10,000.

The Walter Kamman Co., Cincinnati, has been chartered to manufacture ornamental wire and brass fixtures, with a capital of $25,000. The incorporators are: Walter Kamman, Sadie Kamman, John G. Grosz, Abner Thorpe Jr., and W. H. Cobb Jr. The company's works are located at Front and Lawrence streets.

The Cobb Car Co., Lake Charles, La., has been reorganized, and complete foundry equipment will be installed. The officers of the company are as follows: F. E. Thrall, president and treasurer; B. J. Cobb, vice president and superintendent; G. H. Chase, secretary, and Stephen Shea, general manager.

Articles of incorporation have been filed by Coleman & Krause, New York, N. Y. The new company is capitalized at $15,000, and will engage in the manufacture of plain and ornamental sheet metal work, skylights, cornices and roofing. The incorporators of the new enterprise are: Adolph Krause, Sarah Krause, 215 West 140th street; Nathan Coleman, 355 West 115th street, all of New York.

New Construction:—

No change will be made in the buildings at the Elkhart, Ind., engine house of the L. S. & M. S. Ry. Co., on account of the recent fire. The damaged parts will be replaced without any change in design or dimensions.

The Oswald Motor Co., automobile, marine and stationary engines, Goshen, Ind., is erecting a one-story building 30 by 160 feet of cement block with concrete floor. Rapid growth of business has made the move imperative.

The new plant which the Springfield Pump & Elevator Co. has been erecting at Hartford, Conn., is about completed and will be placed in operation at once. The main factory building is two-story brick, 80 by 250 feet. Up to this time the plant has been operated in Springfield. It manufactures elevators.

General Industrial Notes:—

The Lincoln Stove & Range Co., Fremont, O., has increased its capital stock from $300,000 to $400,000.

The capital stock of the Ann Arbor Machine Co., Ann Arbor, Mich., has been increased from $50,000 to $100,000.

The Capital Machine Co., Indianapolis, Ind., which was recently incorporated, has taken over the Capital Machine Works.

The Independent Stove Co., Detroit, has just erected a one-story building 50 x 175 feet which will be used for storage and office purposes.

Stockholders of the American Bell & Foundry Co., Northville, Mich., besides voting to increase the capital stock to $32,000 at the annual meeting, re-elected the old officers.

A petition for the dissolution of the co-partnership known as the Brown Iron & Brass Works of Ogden, Neb., has been filed by President A. W. Brown and other stockholders.

The following were chosen directors of the LaSalle Machine & Tool Co., LaSalle, Ill.: F. W. Matthiessen Sr., F. W. Matthiessen Jr., George P. Blow, E. Roth, and F. G. Trenary.

At the annual meeting of the Columbus Wire & Iron Co., Columbus, O., all of the directors and officers were re-elected. Frank H. Howe, of Columbus, is president of the company.

These directors have been elected by the stockholders of the Salisbury Steel & Iron Co., Utica, N. Y.: E. L. Wells, W. H. Switzer, William J. Myers, William Kirby, A. M. Mills, Henry N. Clark, and George C. Wing.

The directors of the Phelps Iron Co., St. Louis, chose these officers at the annual meeting: President, A. P. DeCamp; vice president, F. B. DeCamp; secretary, William Yule; general manager, W. J. Ohnsong.

Officers re-elected by the American Tool Works, Cincinnati, were: President, Franklin Alter; vice president, J. B. Doan; secretary, Robert S. Alter; treasurer, Henry Luers. Reports showed a prosperous year just closed.

The common pleas court of Franklin county, O., has instructed the receivers of the Okey Motor Car Co., of Columbus, to place the plant in operation again and complete the contracts which the company had on hand.

Stockholders of the Pennsylvania Engineering Co., New Castle, Pa., have elected these officers: President and treasurer, Edward King; vice president, Edwin N. Ohl; secretary, Charles L. Baldwin; general manager, Edward Beadel.

L. L. Patterson & Co., Syracuse, N. Y., wholesale and retail implements, recently incorporated, announce that they buy and sell agricultural implements of all descriptions. Manufacture on a large scale will not be undertaken this season.

The Columbus Iron & Steel Co., Columbus, O., of which J. C. Batelle is president, has purchased 127 acres of limestone in Franklin county. The purchase was made through an agent at Indianapolis and the transfer to the company has just been made.

The Mound City Machine & Pattern Co., St. Louis, Mo., has chosen these officers at its annual meeting: President and treasurer, J. T. Van Dillen; vice president, B. H. Bower; secretary, O'L. Swanzey. The directors are: Messrs. Van Dillen, Bower, and F. A. Schmitz.

W. A. Paxton Jr. has been elected president of the Paxton & Vierling Iron Works, Omaha, Neb., succeeding his father, the late William A. Paxton. The other officers elected are: Vice president, C. J. Vierling; secretary, Louis Vierling; general manager, A. J. Vierling.

Official announcement has been made by the Erie Railroad Co. that its shops at Susquehanna, N. Y., will be closed and nearly all of the 400 hands will

be removed to the company's shops at Hornell, N. Y. This will make the Hornell shops the most important along the company's lines.

The Beaumont Iron Works, Beaumont, Tex., has been placed in the hands of A. B. Brock, receiver. The total assets are placed at $206,000 and the liabilities at $64,110. The financial stringency is assigned as the cause of the failure. The receiver announces that he will continue to operate the plant.

The annual meeting of the Runyon Concrete Machinery Manufacturing Co., Canal Dover, O., resulted in the election of these officers: President, H. E. Gresham; vice president, O. M. Himes; secretary, H. W. Streb; treasurer, S. L. Holmes; who, with the following, constitute the directors: C. M. Runyon, A. W. Krumhar and F. Smith.

The machine manufacturing plant conducted by W. Foglesong, Dayton, O., has been purchased by Alfred C. Jackson, John C. Collett and J. W. Mundorff. The factory will be moved to a new location. Special machinery and machine jobbing will be added to the manufacture of the old firm's lines.

Re-election of directors took place at the annual meeting of the Dover Forge & Iron Co., Canal Dover, O. The following officers were also re-elected: President, A. J. Krantz; vice president, James Rees; secretary and treasurer, Joseph A. Krantz. Reports of earnings for the year were satisfactory as well as prospects for this year.

The Quincy Stove Manufacturing Co., Quincy, Ill., has chosen these officers: President, August Heidbreder; vice president, Nicholas King; secretary, H. F. Figgen; treasurer, Charles A. Heidbreder. They with the following compose the board of directors: David Reidinger, Edward Menke, Edward Sohm, George Keller, H. Sprick and H. Gliechman.

The annual meeting of the Peden Iron & Steel Co., Houston, Tex., resulted in the election of the following officers: President, D. D. Peden Sr.; secretary and treasurer, D. D. Peden Jr.; vice president and manager, E. A. Peden; assistant manager, John A. Harvin. They with the following were elected directors: O. L. Cochran, R. C. Terrell, J. A. Peebles, E. B. Parker and S. C. Red.

At the organization meeting of the board of directors of the U. S. Metal & Mfg. Co., held Jan. 21 immediately after the stockholders' meeting at Plainfield, N. J., officers were re-elected as follows: President, B. A. Hegeman Jr.; general manager and treasurer, M. Jackson Crispin; secretary and assistant treasurer, R. G. Jeffery. The financial statement submitted showed the company to be in a flourishing state.

At the first annual meeting of the Rock Island Tool Co., Rock Island, Ill., reports were read showing that satisfactory business has been built up since May last, when operations were commenced by the company. Trade has been opened up with Europe, Canada, Mexico and South America in the company's product, vises. These directors were elected: F. G. Young, Charles McHugh, B. C. Hartz, F. W. Blochlinger, M. S. Heagy and F. J. Stohmer.

The annual meeting of the Guerber Engineering Co., Bethlehem, Pa., resulted in the election of the following directors: A. N. Cleaver, F. C. Stout, William B. Myers, Charles M. Dodson, Owen F. Leibert, W. A. Wilbur, Joseph W. Adams, P. A. E. Guerber and J. E. Boatrite. They chose these officers: President, A. N. Cleaver; vice president, F. C. Stout; treasurer, William B. Myers; secretary, Franklin H. Brunner; manager, J. E. Boatrite; superintendent, P. A. E. Guerber; superintendent of manufacture, H. R. Walters.

Trade Notes:—

The general offices and works of the Petroleum Iron Works Co. have been removed to Sharon, Pa.

The International Steam Pump Co. has leased the entire nineteenth floor in the United States Realty building, 115 Broadway, New York, for a period of eight years for office purposes.

The Rogers Iron Manufacturing Co., Muskegon, Mich., has received an order for 25 three-ton Wood's lifeboat carriages for the United States government life-saving service.

The partnership between Henry C. Townsend and Delbert H. Decker, solicitors of patents, 141 Broadway, New York, has been dissolved. Mr. Townsend succeeds to the business which will be conducted under the old firm name. Charles F. Tischner, M. E., Stevens Institute of Technology, has been admitted to membership in the firm.

The main offices of the Kennedy Valve Manufacturing Co. were removed Feb. 1 to the new plant at Elmira, N. Y. The move was made for the better serving of customers and the general facilitation of business. Local sales offices and store will be maintained in the old New York City office site, 57 Beekman street.

The Redding Boiler & Pipe Works, Redding, Cal., has built up one of the largest plants in northern California. Thomas G. Howe and William A. Findley, the heads of the company, are expert mechanics and have carried to completion recently several large contracts. One was the construction of a gas holder for the Northern California Power Co. at Redding, 50 feet in diameter and 30 feet high. A still larger one, 60 feet in diameter and 40 feet high, is being constructed for the same company at Red Bluff. The plant is located in the center of the mining districts of Northern California, Nevada and southern Oregon.

At a meeting of the executive committee of the Canadian Manufacturers' Association, held at Hamilton, Ont., Jan. 16, it was decided to establish a tariff department in charge of an expert to investigate demands for increased protection. Should it be found that a case is fairly established the association will take it up; but manufacturers who cannot substantiate their cases will not receive the support of the association in any representations they may make to the government. In view of present labor conditions it was resolved to discontinue the agency established in London for sending out skilled artisans to Canadian factories.

Fires:—

The machine shop and warehouse of G. W. Thompson, Luzerne Borough, Pa., were badly damaged by fire Jan. 22. The loss will reach $10,000, which is not protected by insurance.

Fire at Baltimore Jan. 24 caused $100,000 damage upon the plants of the Baltimore Bell & Brass Co., the William L. Hollingsworth Co., machinists, the Flynn & Emerich Co., machinists, and other manufactories.

The Manufacturers' Association of Beaver county, Pa., has elected the following executive officers: President, Fred N. Beegle, Beaver Falls; vice presidents, John A. Miller, Rochester; Joseph Mayer, New Brighton; F. C. Eaton, Monaca; Richard R. Hice, Beaver; secretary, J. P. Keys, Rochester; treasurer, Charles W. Klein, Beaver Falls. The purpose for which the corporation is formed is to foster, protect and promote the welfare and interests of manufacturers; to gather and preserve statistics, and to protect and encourage manufacturing, trade and commerce in the county by bringing about united, intelligent and effective action of its members on all matters of mutual interest.